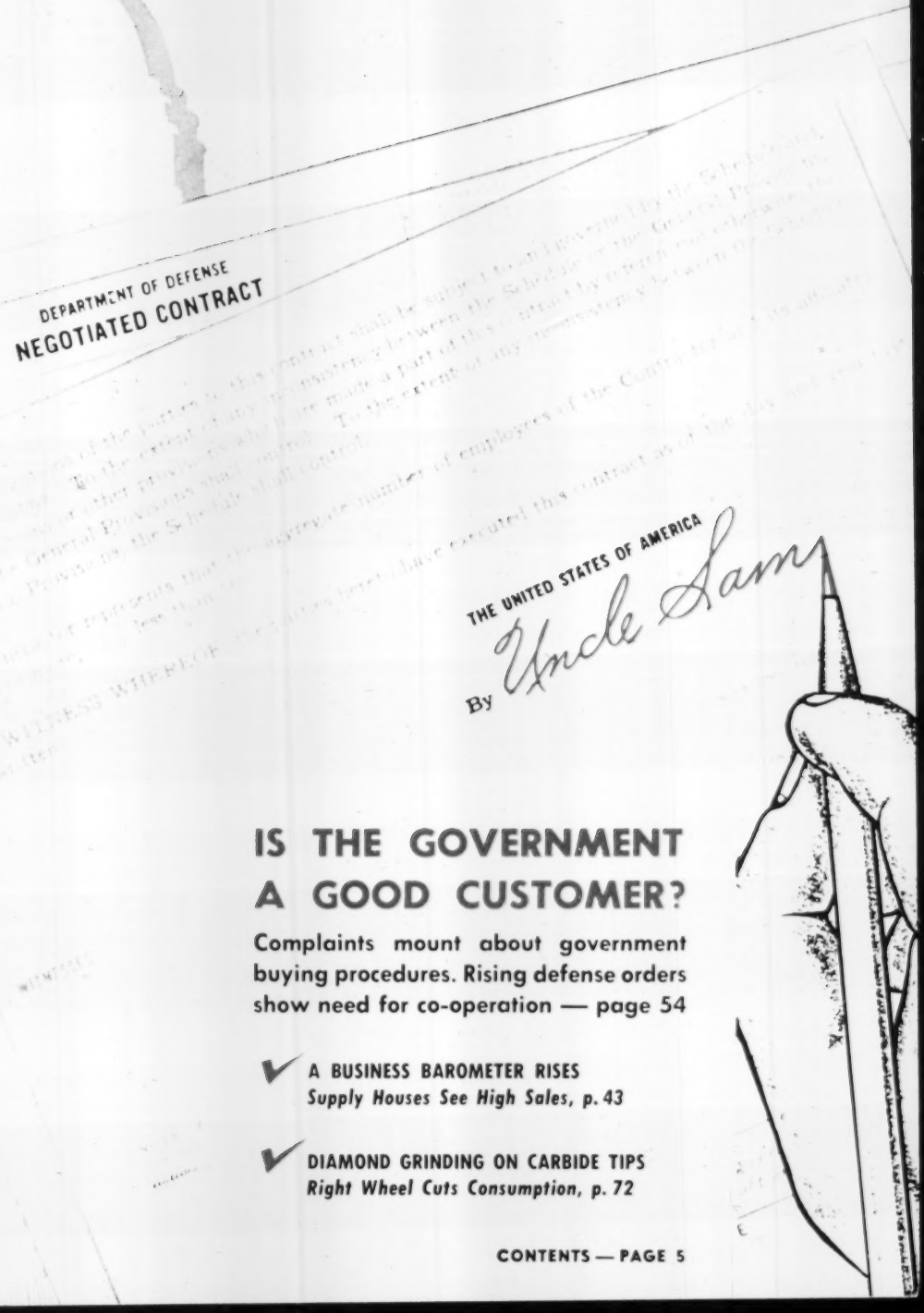
FEBRUARY 16, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING



IS THE GOVERNMENT A GOOD CUSTOMER?

Complaints mount about government buying procedures. Rising defense orders show need for co-operation — page 54

- A BUSINESS BAROMETER RISES
  Supply Houses See High Sales, p. 43
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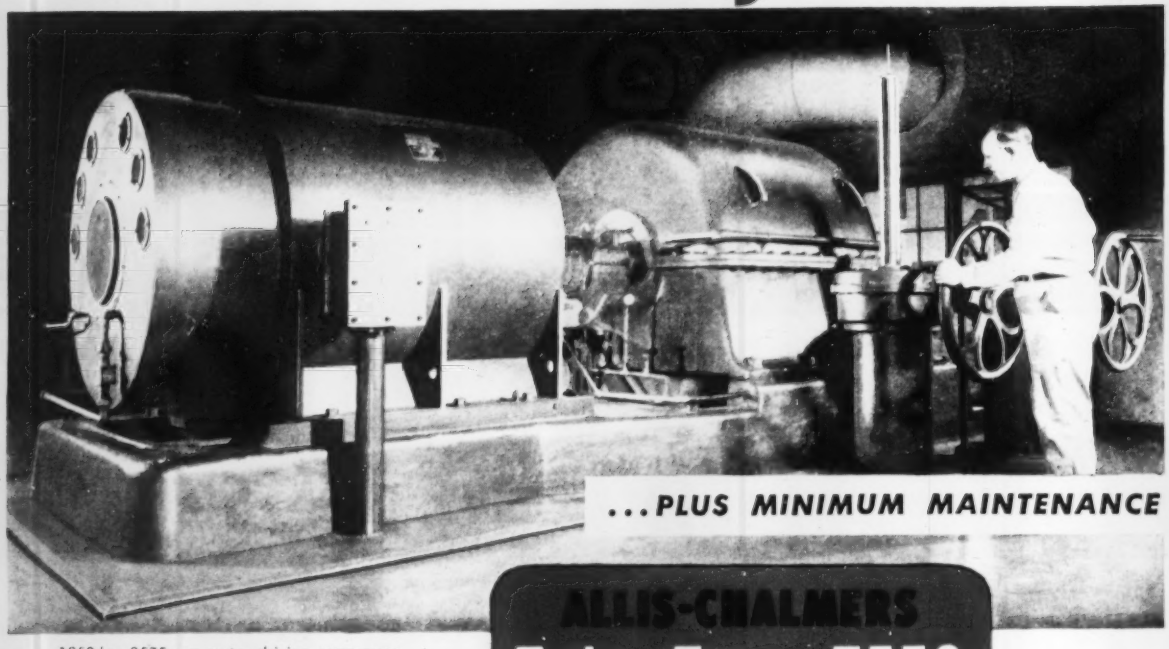
YOU CAN HAVE Size... AND Safety TOO



1250-hp, 3575-rpm motor driving compressor.

ALLIS-CHALMERS Tube-Type TEFC MOTORS

A few years ago, explosion-proof motors were limited to small sizes — because there was no practical way to cool large totally enclosed fan-cooled motors. Allis-Chalmers ended that limitation with the introduction of *tube-type* air-to-air heat exchanger construction in 1946.

Tube-type construction makes both large sizes and minimum maintenance possible because it provides:

1. **Full internal air circulation** plus *circumferential tube distribution* . . . to assure efficient, even cooling of motor.

2. **Complete enclosure** . . . to protect stator core and other electrical parts from both dirt and corrosion.

3. **Self-cleaning action** . . . result of generous flow of outside air through smooth, straight heat exchanger tubes.

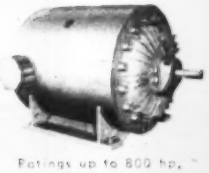
RATINGS AVAILABLE

Both standard and explosion-proof TEFC motors are built with *tube-type* construction in ratings from 40 hp at 600 rpm to several thousand horsepower. Ratings up to 800 hp at 3600 rpm are available with Underwriters' Labels.

PROVED IN OPERATION

In sizes from 250 to 2500 hp alone, purchases of these *tube-type* motors total more than 215,000 hp. For more information about these motors that have been proved in operation indoors and out, call in your nearby A-C representative or write for Bulletins 51B7149 *(it's gear)* and 05B7150, Allis-Chalmers, Milwaukee 1, Wis.

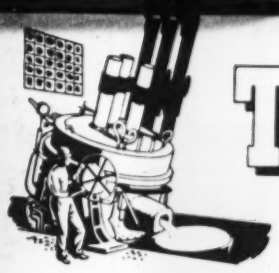
A 3669



Ratings up to 800 hp, 3600 rpm.

Construction at larger ratings.

ALLIS-CHALMERS

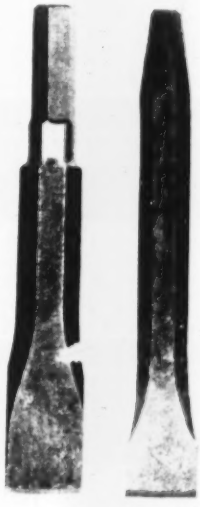


Tool Steel Topics

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Which chisel has the better design?



Both these chisels, used in pneumatic chipping hammers, are made from shock-resisting tool steel (Bethlehem Omega). One of them consistently gives long service life, while the other is subject to breakage—due directly to its design.

Can you pick out the better design? Look at them carefully. It's the one on the right with the tapered shank.

You still see a lot of chisels designed like the one at the left, that's so susceptible to breakage. Even with the fillet between the round and octagon sections, this chisel is subject to fatigue failures at the change of section. Stresses become concentrated there, causing premature fractures.

Shank failures are virtually unknown in chisels of the improved, tapered-shank design. The gradual taper prevents any dangerous concentration of stresses.

The comparison of these two chisels helps to explain why it takes more than just good tool steel to get the best performance out of tools and dies. It takes good tool design . . . correct heat-treatment . . . the right grinding technique . . . and proper application. But of course it takes the right grade of good tool steel, too!

TOOLMAKER AT WORK—As this progressive die nears completion, the toolmaker checks dimensions carefully. The die is used to blank, punch and form lawnmower parts from 3/16-in. steel strip. It is made from Lehigh H, a high-carbon, high-chromium grade, and hardened to Rockwell C 60. When placed in service the die turned out about 30,000 pieces between grinds, operating in a 200-ton press.

Omega halts coupling breakage

Omega tool steel plays a vital role in the drilling of blast holes at the Scrub Oaks and Oxford Mines in the historic iron ore belt of Northern New Jersey. In drilling holes from 35 to 125 ft deep, rods of 1-in. hollow drill steel are joined by patented couplings developed by Ralph Catanzarita, drill-steel-shop foreman at Scrub Oaks mine.

When this method of drilling long holes was first tried, the frequent breakage of couplings was discouraging. Our salesman learned of the trouble and sold them on Omega. This shock-resisting grade did the trick. Coupling failures were reduced to about 1 in 500; and there hasn't been one case of stripped threads.

Omega is outstanding for chisels, and it does a swell job on other cold shock tools: knockout pins, pawls, punches, swaging dies, clutch pins, shear blades, drive shafts, and machine parts subject to slam-bang shocks. Omega is a tool steel engineered to take the heaviest shocks in its stride. Its typical analysis:

C	Mn	Si	Mo	Va
.60	.70	1.85	.50	.25

It takes a really tough tool steel to take the shock and stress involved in coupling together rods of rock drill steel. The coupling at left is unused. The one at the right has been used in drilling 1700 ft of blast hole in hard iron ore. The outside wearing surfaces have been worn down by the abrasive rock

BETHLEHEM TOOL STEEL ENGINEER SAYS:

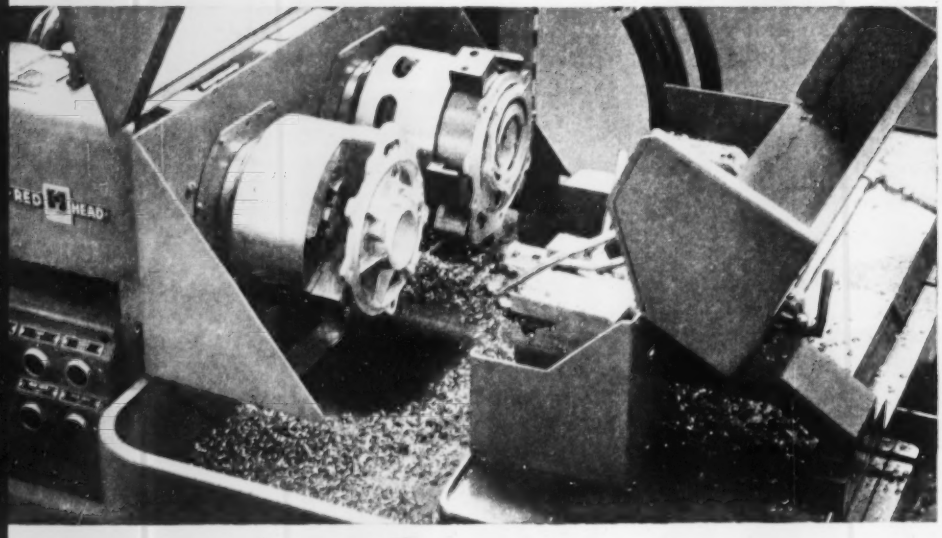
Air-hardening steels should be quenched uniformly

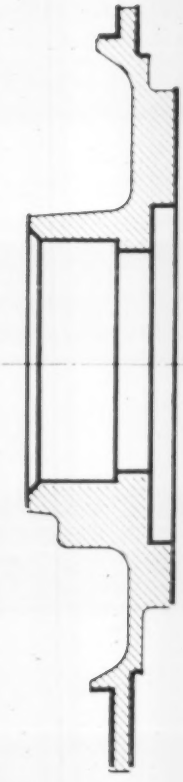
What are the advantages of uniform quenching? First, a minimum of dimensional change or distortion; and second, a minimum of undesirable residual quenching stresses.

Here are some helpful points to remember when quenching air-hardening steels:

- Place the tool on a coarse-mesh screen to permit circulation of air on all sides of the tool.
- Turn over the tool at intervals to improve cooling uniformity.
- Use a fan or a blast of dry air over the sections which cool most slowly. (Caution: *Too much* air will cause additional non-uniformity.)
- Sections of the tool which cool too rapidly can be wrapped in wire mesh to retard cooling.
- If one portion of the tool turns black long before other portions, you can be sure that it's not cooling uniformly.

13 surfaces borized in 3 operations on 2 Heald Bore-Matics





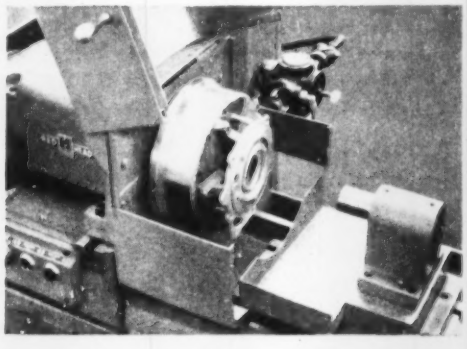
The 12 surfaces indicated above are precision borized on the Heald Model 221 Bore-Matic shown at left — one station for finishing each side of the work.

Here's another example of how Heald machines make fast work of a complicated, multi-surface borizing job. The parts — aluminum die-cast pump casings — are first bored, faced, turned and chamfered on 12 different surfaces with the two-station Model 221 Bore-Matic shown above. A bridged-over quill for the boring operations allows the boring tool to remain fixed while the facing tools are indexed laterally. One station is used for each side of the work.

After part has been finished on this machine, a bronze bushing is pressed in and work is transferred to the Model 121 Bore-Matic shown at the right. Here the bushing is precision bored by a single tool on the machine table.

Remember — when it comes to precision finishing, it pays to come to Heald.

The final operation — finish boring of the bronze bushing inserted in the work — is done on the single station Model 121 Bore-Matic shown below.



HEALD

Case Study
No. 2233-96 in
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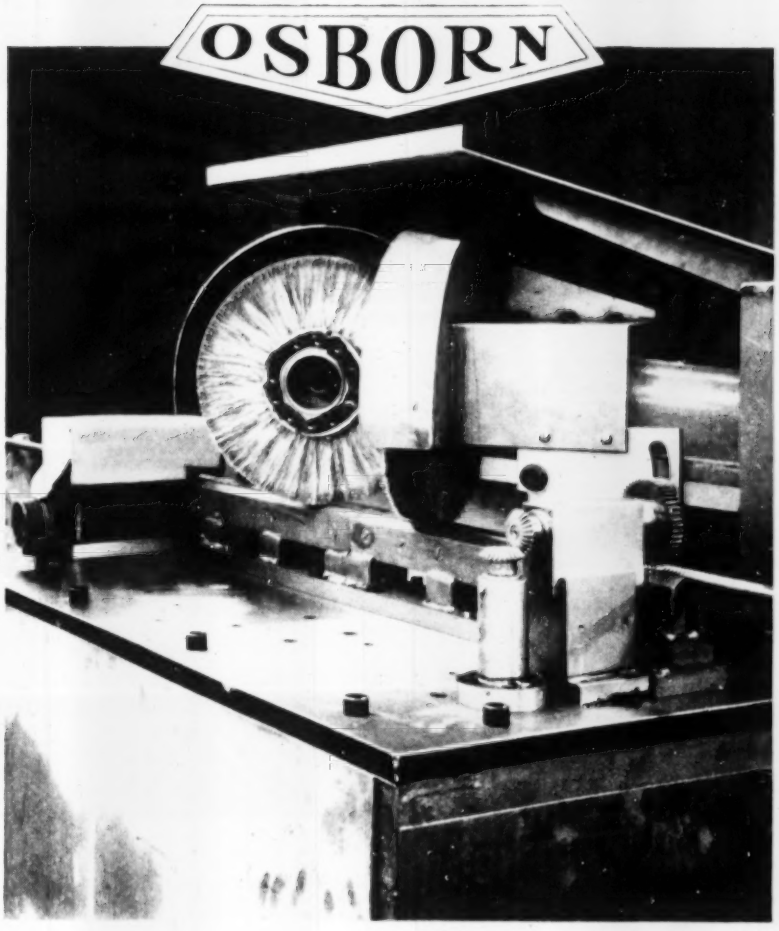
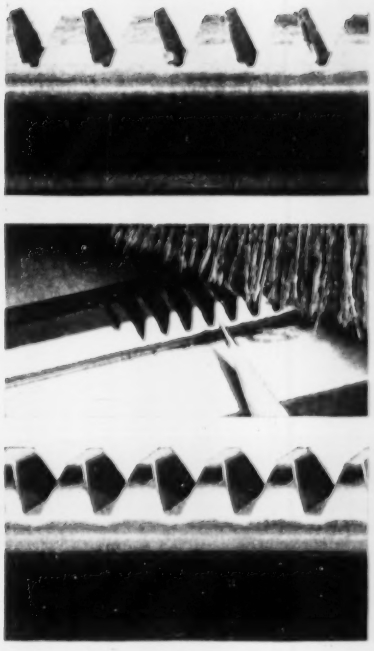




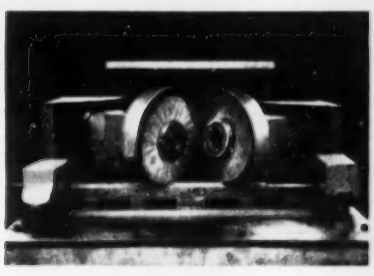
BEFORE AND AFTER. Top view shows closeup of rack teeth with light burrs and rough surface before brushing by new "push-button" method. Center view shows closeup of rack in machine after completion of brushing. Bottom view shows teeth after brushing. Note uniform surfaces and smooth finish on all teeth.

Formerly 50 minutes...
Now brush-deburred in 6 minutes

8 times as fast . . . more uniform deburring . . . finer surface finish. These are the advantages gained by a large machinery manufacturer with an automatic power-brushing method. The part: a rack gear, 17 ft. long with more than 1000 teeth. The job: light deburring of machine-cut teeth, and blending the junctures of intersecting surfaces to form smooth curves in place of fragile, sharp edges.

With the help of their **O**sborn **B**rushing **A**nalyst, they devised the machine shown above. This automatically controlled machine with two heads of Osborn Fascut brushes does the entire job in 6 minutes. Burr removal and surface juncture blend are far superior to former methods.

This is typical of thousands of cases where production is being vastly improved with Osborn power brushing methods. Find out how you can cut *your* costs! Call in your **OBA** today or write *The Osborn Manufacturing Company, Dept. G-3, 5401 Hamilton Avenue, Cleveland 14, Ohio.*



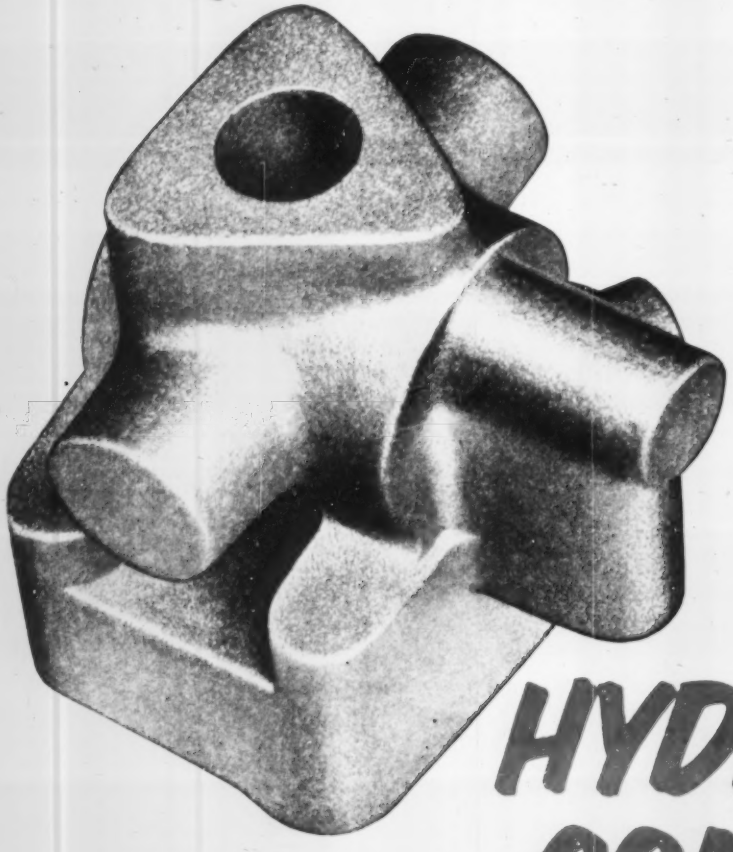
HOW IT'S DONE. Two rotating Osborn power brushes, engage rack teeth at angles as shown. At push of button, rack drives through machine at about 8 ft. per minute. When the rack completes passage, the drive reverses and sends it back in the other direction. On return travel of part, the direction of brush rotation is reversed to contact surfaces on the opposite side of rack. This gives both sides of teeth uniform brushing.

WHAT'S YOUR PROBLEM? The nearby Osborn Brushing Analyst is experienced in working with machine designers and methods engineers to solve problems with the latest power brushing techniques. Feel free to call him for help!

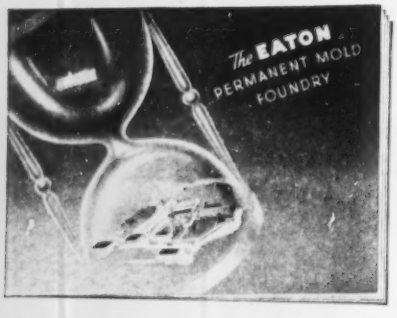
Osborn Brushes

OSBORN POWER, MAINTENANCE AND PAINT BRUSHES AND FOUNDRY MOLDING MACHINES

Eaton Permanent Mold Gray Iron Castings—



for HYDRAULIC CONTROLS



Send for your free copy of the 32-page illustrated booklet: "The Eaton Permanent Mold Foundry." It tells the story of Permanent Mold Castings and takes you on a picture-tour of the Eaton Foundry at Vassar, Michigan.

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This Week in Metalworking

STEEL

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STUDY THE FACTS!

ZINC with Luster-on IS SUPERIOR TO CADMIUM for most industrial applications

Preconceived notions that cadmium plating just naturally offers better protection than zinc are contrary to the true facts. Simply because cadmium is freer again is no reason for re-converting to it. Cadmium is still and always will be far more costly than zinc. When the zinc is passivated in Luster-on conversion treatment it is far superior to cadmium for all but extremely specific applications. These are basically (1) a marine atmosphere and (2) a bearing surface.

FACT NO. 1

ZINC plus LUSTER-ON is DEFINITELY SUPERIOR TO CADMIUM IN AN INDUSTRIAL ATMOSPHERE.

FACT NO. 2

ZINC plus LUSTER-ON is DEFINITELY MORE ECONOMICAL THAN CADMIUM.

BUT IF YOU MUST USE CADMIUM to meet specifications, the new LUSTER-ON Cd, specially developed to use on Cadmium plate, will give you a BETTER, BRIGHTER CADMIUM.

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Behind the Scenes...

Daffynition

In the current issue of *Machine Design*, which as you probably know comes out of our same print shop, there's a cutie that we're going to steal because it may strike your sense of humor as it did ours. It seems that a co-ed, taking a course in machine design, was asked to describe a well-known pair of machine parts and came up with this classic answer: "A bolt is a thing like a stick of hard metal such as iron with a square bunch on one end and a lot of scratching wound around the other end. A nut is just like a bolt only opposite, being a hole in a little square bunch of iron sawed off short, with wrinkles around inside the hole". Oh, brother!

Up To Here In Records

Globe Wernicke and others please note: Associate editor Sam Baker has just come up with some very encouraging figures for makers of filing cabinets. General Services Administration chief Jesse Larson estimates that federal records are now being accumulated at the rate of 3,200,000 cubic feet a year—enough to fill 100,000 filing cabinets! The GSA is making a thorough study of the situation and hopes to get federal agencies to carry out recommendations for records retirement. Just wait—one of the smart p.r. boys is going to cook up a big bonfire party up on Capitol Hill one of these days, and the Republicans can whoop and holler while all the old pink forms with three carbons and the yellow forms in triplicate, etc. etc. are piled a hundred feet high and burned to a crisp.

Worth Waiting For

If by any chance you still haven't received your copy of the Specifications Handbook, we can only say it'll be along very shortly. As you will see when your copy arrives it is an intricate binding job with the tabbed index and that's what delayed delivery for several days. But we're sure you'll agree it is well worth waiting for!

Sharp Idea

The Imperial Knife Co. is located in Providence, Rhode Island on Blount Street, but the natives pronounce it "blunt". "That," says Felix Mirando, president of the company, "is no name for the business address of a company that turns out the sharpest knives in the world". And so Mr. M. has filed a petition to change the name of the street to "Imperial Place" and we wish him well!

Midwinter Letdown

Of course, it may be different where you live but this has really been a mild winter around here. It never fails. This is the first year in our lives that we were all set for a cold hard winter: Snow tires on the jalopy, all the storm windows up early, the kids well equipped with new ice skates and a couple of new sleds, and even the dogs had plenty of fresh straw in their kennel. So what happens? We've had practically no snow, no ice, and the forsythia is starting to bud. You can't win.

Puzzled?

'Twould appear there's a little difference of opinion on the January 19 bottle cap puzzle. As F. Reuter, Tool Room Superintendent, Fisher Body Division and T. H. Messer, Gulf Oil Corp., point out there is no doubt that 2519 is *a* correct answer but with much gusto they prove that 1259 is also keerect. We're convinced.

Also that Sam had to travel 96.56 miles to catch up with Al at the head of the army (Feb. 21, O. A. Davis, George Frederick, L. D. Rice, and a number of others seem to agree.

Now for a new one: Sam was commander of a sizable group of men and decided to march them in a parade. He formed them 10 abreast, but noticed the rear rank contained only 9 men. Being the orderly sort, he arranged them 9 abreast but found that there were only 8 men in the rear rank. He then tried 8, 7, 6, 5, 4, 3, and 2 abreast but every time there was always one man short in the rear rank. Al then appeared on the scene and everyone was happy, but the question is how many men was Sam originally trying to march in the parade? The first correct answer to reach ol' Shrdlu will get an extra copy of the Specifications Handbook for free.

Shrdlu

(Metalworking Outlook—Page 35)

Wellman will build it

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Mine Hoists
Skip Hoists
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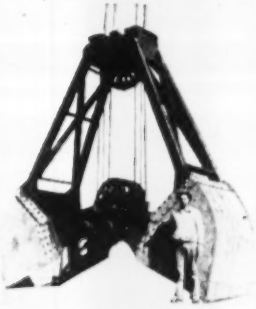
Wellman ore and coal handling bridges

give fast and efficient operation

One of two 6-ton Coal Handling Bridges in this installation.



6-ton Wellman Williams Type Coal Bucket used with these bridges.

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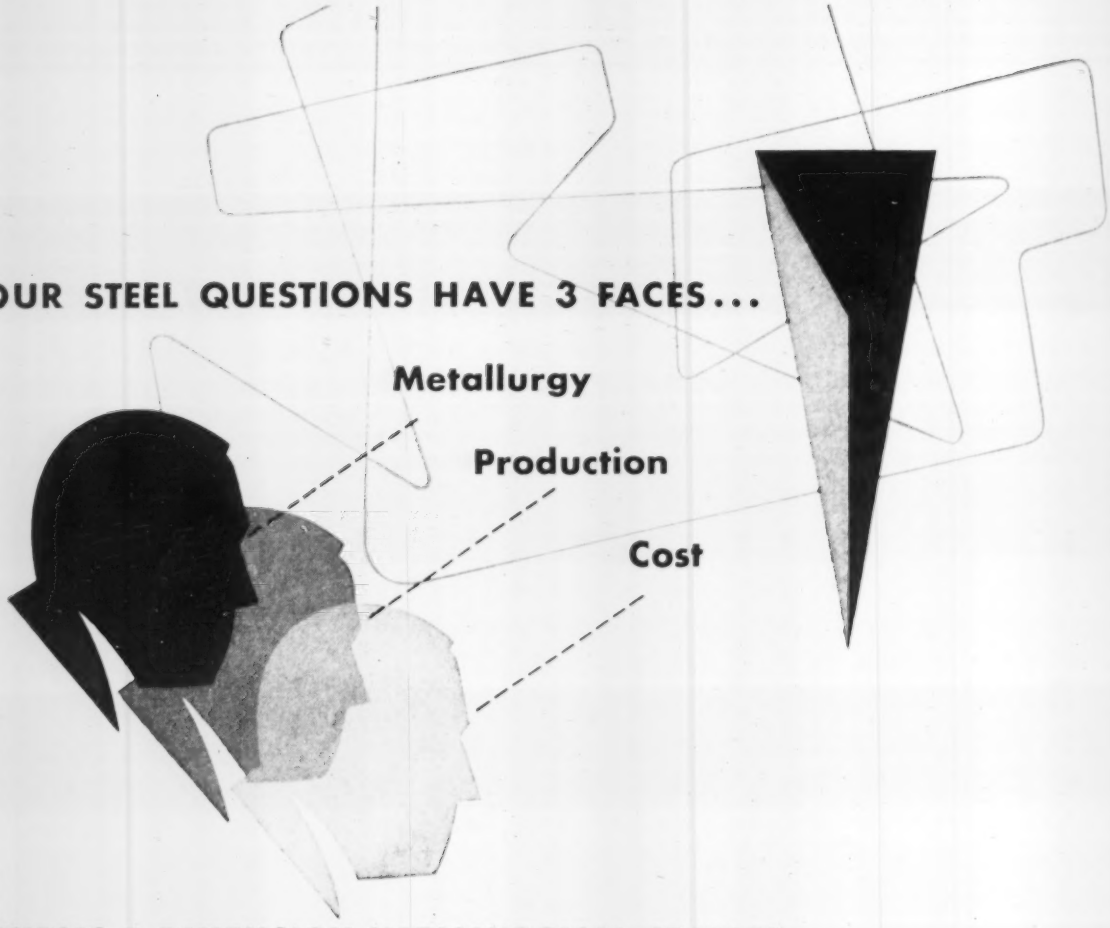

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WRITE FOR this booklet of case histories on "Republic Alloy Steels, and How to Get the Most Out of Them."

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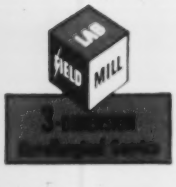

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HOBART "111" AWS ASTM E6020. A mild steel rod for horizontal fillet and downhand welding, AC or DC.

HOBART "TUFANHARD." A rod recommended for hard surfacing, DC or AC.

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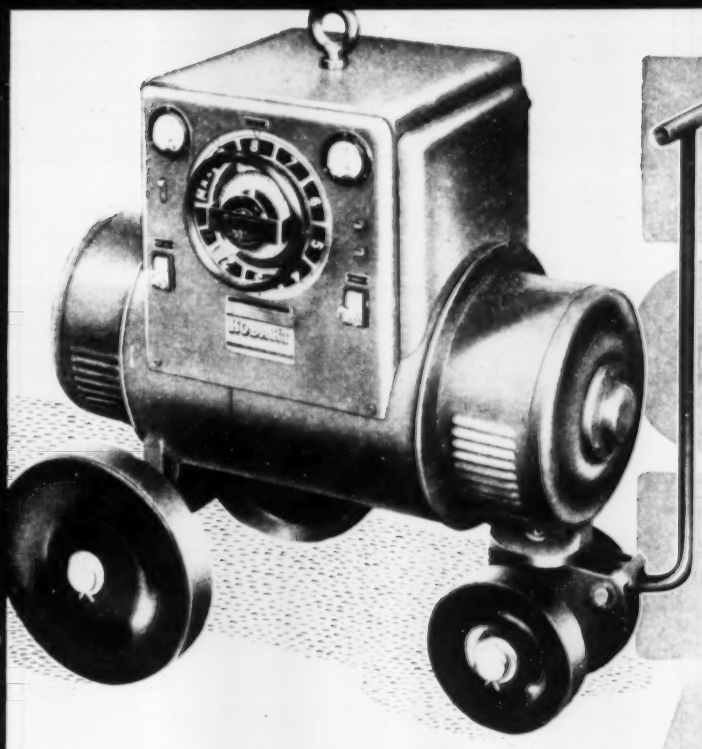

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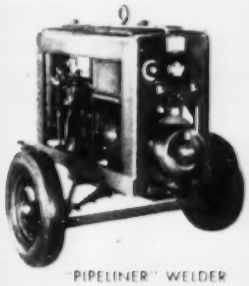
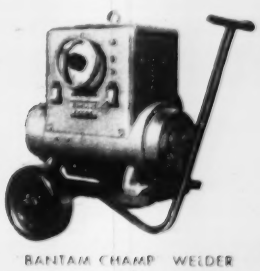
GAS DRIVE WELDER



"PIPELINER" WELDER



"BANTAM CHAMP" WELDER

☐ FREE

"How to get better welds." Valuable new vest pocket booklet.

● HOBART BROTHERS COMPANY, BOX ST-23, TROY, OHIO

Without obligation, send information on items checked below.

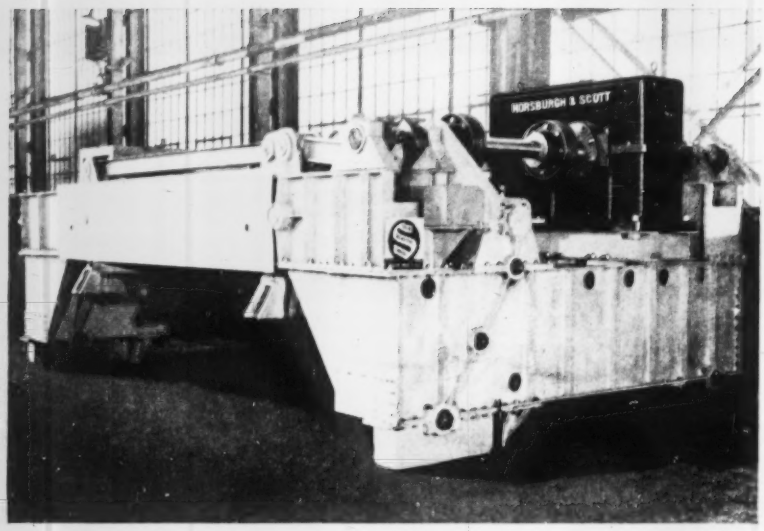
☐ Electric Drive Welder ☐ Gas Drive Welder ☐ Pipeliner Welder ☐ Bantam Champ Welder. Send me ☐ Welder Catalog ☐ Electrode Catalog ☐ Accessory Catalog

Name _____ Position _____

Firm _____

Address _____

Giving a lift to 56,000 pounds of



soaking pit cover through . . .

H&S REDUCERS

• The above photograph shows a soaking pit cover crane designed and built by Salem Engineering Company. Two Horsburgh & Scott Helical Speed Reducers are used on each crane...the lift drive handles a cover weighing about 28 tons and operates at a speed of 6′ per minute... the traverse drive moves the crane at a speed of 88′ per minute. Many of these cranes have been operating very satisfactorily for twelve to fifteen years... actual tribute to complete engineering design.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVE. • CLEVELAND 14, OHIO, U.S.A.

Send note on Company Letterhead for Speed Reducer Catalog 46

LETTERS
TO THE EDITORS

Foreign Extrusion Process Noted

As a new subscriber to your magazine, I am pleased to tell you how much we have enjoyed STEEL. The make-up provides for easy reading on the particular subjects that we are interested in and the entire approach is very forward and up to date.

In your issue of Oct. 27, 1952, p. 71, there appeared an article, "A New Foreign Extrusion Process." This is a subject that we are following very closely but did not know of your article until several days ago. May we have a tear sheet of that article?

H. W. Pfahler
president
Pfahler Mfg. Corp.
Mt. Vernon, N. Y.

• *Sent.—ED.*

The Facts Are Available

Congratulations on a fine job in preparing your annual issue of STEEL. Believe me we put this issue to good use.

As market analyst of National Motor Bearing Co., I am particularly interested in the section "1953 Metalworking Facts & Figures." I am wondering whether you have reprints of this section only. It would be very convenient for me to have these facts close at hand. Also we could then put our copy of the magazine in our library where it would be available to all of our engineers and research men.

C. S. Louskos
market analyst
National Motor Bearing Co. Inc.
Redwood City, Calif.

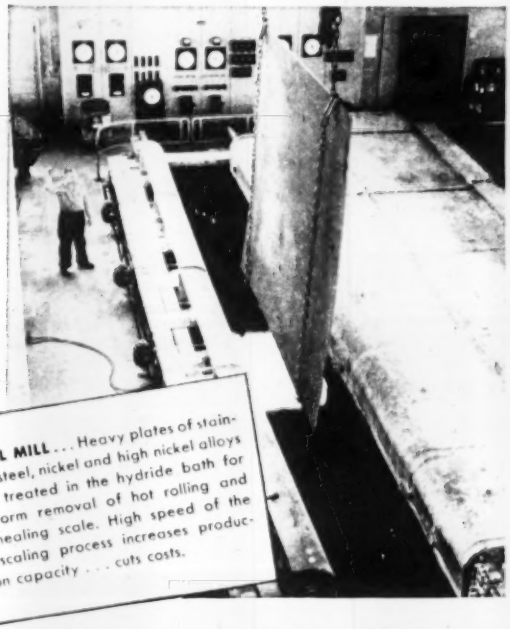
• *Reprints of the 1953 Metalworking Facts & Figures are now available from our Readers' Service Department.—ED.*

Delivery Dates Do Matter

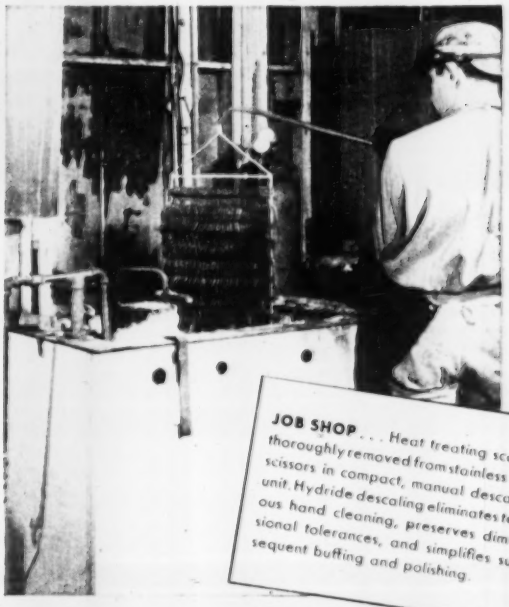
In your Jan. 12 issue on p. 37 you have published a table titled "Delivery Dates for Components." As a manufacturer of fasteners we would take issue with the lead time of 0-6 weeks, and also the outlook which is indicated as improvement.

It is true that we do not manufacture bolts and nuts which are mentioned in the text on the same page, but we do produce a wide range of cold-headed fasteners. Generally speaking, our deliveries are 8-10 weeks, and the situa-

NO SECTION TOO BIG . . . NO PART TOO SMALL



STEEL MILL . . . Heavy plates of stainless steel, nickel and high nickel alloys are treated in the hydride bath for uniform removal of hot rolling and annealing scale. High speed of the descaling process increases production capacity . . . cuts costs.



JOB SHOP . . . Heat treating scale is thoroughly removed from stainless steel scissors in compact, manual descaling unit. Hydride descaling eliminates tedious hand cleaning, preserves dimensional tolerances, and simplifies subsequent buffing and polishing.

FOR THE
DU PONT SODIUM HYDRIDE DESCALING PROCESS

FROM OUNCES TO TONS! That's the capacity range of current sodium hydride installations in mills, factories and job shops of all sizes. And with each unit, the same results—speedy, uniform descaling of many different metals at a saving in time and material. Hydride descaling leaves surfaces clean and bright . . . does not attack base metal. Yet, scale is thoroughly removed from even the most intricate part by the penetrating bath action.

FOR MORE INFORMATION about the Du Pont Sodium Hydride Descaling Process, just get in touch with our nearest district or sales office or send the coupon below to: E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

DISTRICT AND SALES OFFICES:

Baltimore • Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit
Kansas City* • Los Angeles • New York • Philadelphia • Pittsburgh • San Francisco

*Barrett, Haentjens & Page, Inc.

OUTSTANDING ADVANTAGES OF THE SODIUM HYDRIDE PROCESS

- **HIGH-SPEED OPERATION**—Descales in shortest practicable time cycle . . . can be adapted to manual, conveyorized or continuous operation.
- **NO LOSS OF BASE METAL**—Bath action is reducing. Reaction stops when oxygen is removed from scale, eliminates pickling losses, etching and pitting.
- **ECONOMICAL TO OPERATE**—Permits savings in acid and metal . . . handles large volume of work in small space . . . is non-electrolytic.
- **HANDLES DIFFERENT METALS**—Alloy steel, stainless steel, nickel, copper, titanium and cobalt bearing alloys can be efficiently descaled—even in the same bath.
- **UNIFORM DESCALING**—On all surfaces without need for special racking procedures.
- **USES LOW-COST EQUIPMENT**—(Carbon Steel Tanks). NO HYDROGEN EMBRITTLEMENT.

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Department
Wilmington 98, Delaware

Please send me more information on the Du Pont Hydride Descaling Process: advantages, applications, equipment used. I am interested in cleaning _____ products.

Name _____ Position _____

Firm _____

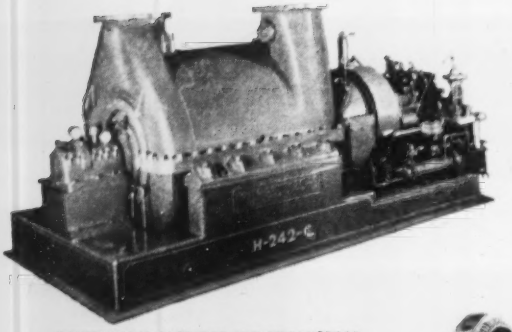
Street and No. _____

City _____ State _____

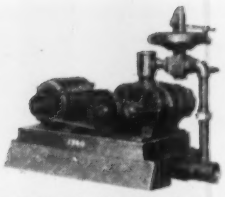
DU PONT
Sodium hydride process for positive descaling

DU PONT

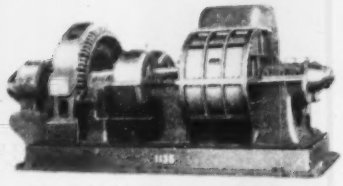
BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY



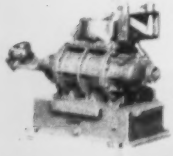
CENTRIFUGAL BLOWERS AND EXHAUSTERS
single and multi-stage units, in capacities from 2,000 cfm to 100,000 cfm or higher, at maximum practical pressures.



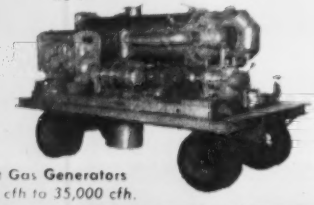
Rotary Positive Gas Pumps
5 cfm to 50,000 cfm.



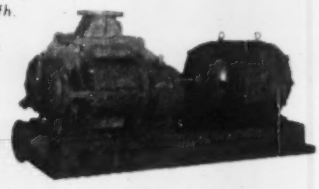
Rotary Positive Blowers and Exhausters
5 cfm to 50,000 cfm.



Positive Displacement Meters
4,000 cfh to 1,000,000 cfh.



Inert Gas Generators
1,000 cfh to 35,000 cfh.



Cycloidal Vacuum Pumps
500 cfm to 13,000 cfm.

WE *Specialize* IN YOUR PROBLEMS OF MOVING GAS OR AIR!

You may need to move a thimbleful of gas . . . or create a cyclone of whirling air. Whatever your problem, we've probably met something close to it, in experience of almost a century of building such equipment.

Another reason why we know so much about this job is that it's all we do. Our customers range from the "giants of industry" to the neighborhood plant, both of whose production depends upon continuous, reliable, economical performance of air and gas handling units. Because we build the exclusive *dual-ability* line of Rotary Positive and Centrifugal Units, in a wide range of sizes, we offer a *dual choice* which permits completely unbiased recommendations.

So—if you have a problem today—or anticipate one a year or five years from now, we suggest you call upon the facilities of R-C Specialists. Write for bulletins on any specific equipment.

ROOTS-CONNERSVILLE

Exclusive Specialists in Handling Gas and Air

ROOTS-CONNERSVILLE BLOWER
A DIVISION OF DRESSER INDUSTRIES, INC. • 153 Shelton Ave. • Connersville, Indiana

LETTERS

Concluded from preceding page

tion in the foreseeable future does not indicate any improvement.

If all users of fasteners were to follow the lead time you indicate, we and many others are going to be constantly in "hot water" when we are forced to quote much longer deliveries than those you indicate.

V. L. Bradford
Vice president, sales
Milford Rivet & Machine Co.
Milford, Conn.

• *We queried many users and makers of fasteners and the delivery period quoted is the average of the respondents. But, we pointed out in the table that* "exceptions are to be anticipated," *especially when the items involved are not standard.—ED.*

Biting the Feeding Hand

I was rather startled to observe in your article "European Competition Strengthens as Korean Boom Fades," (Dec. 8, p. 76) that we have had for years the solution to our unemployment problems within hand's reach, and we did not know it. Gosh, these evil inspired Italian unemployment laws!

May I congratulate you on this excerpt of really hard American thinking as applied to the rest of the world's problems. Unfortunately no hint is given as to the method by which fired employees could be helped to keep body and soul together until they get an opportunity for a new job. Just a trifling matter of detail. Some government plan perhaps? And you would supply the money, huh?

L. Perera
citizen
The Italian Republic
Milan, Italy

• *We have supplied plenty.—ED.*

Practical Blast Furnace Man

The reprint "Blast Furnace Practice," by Charles E. Agnew, is being used currently as a text in our blast furnace practice class.

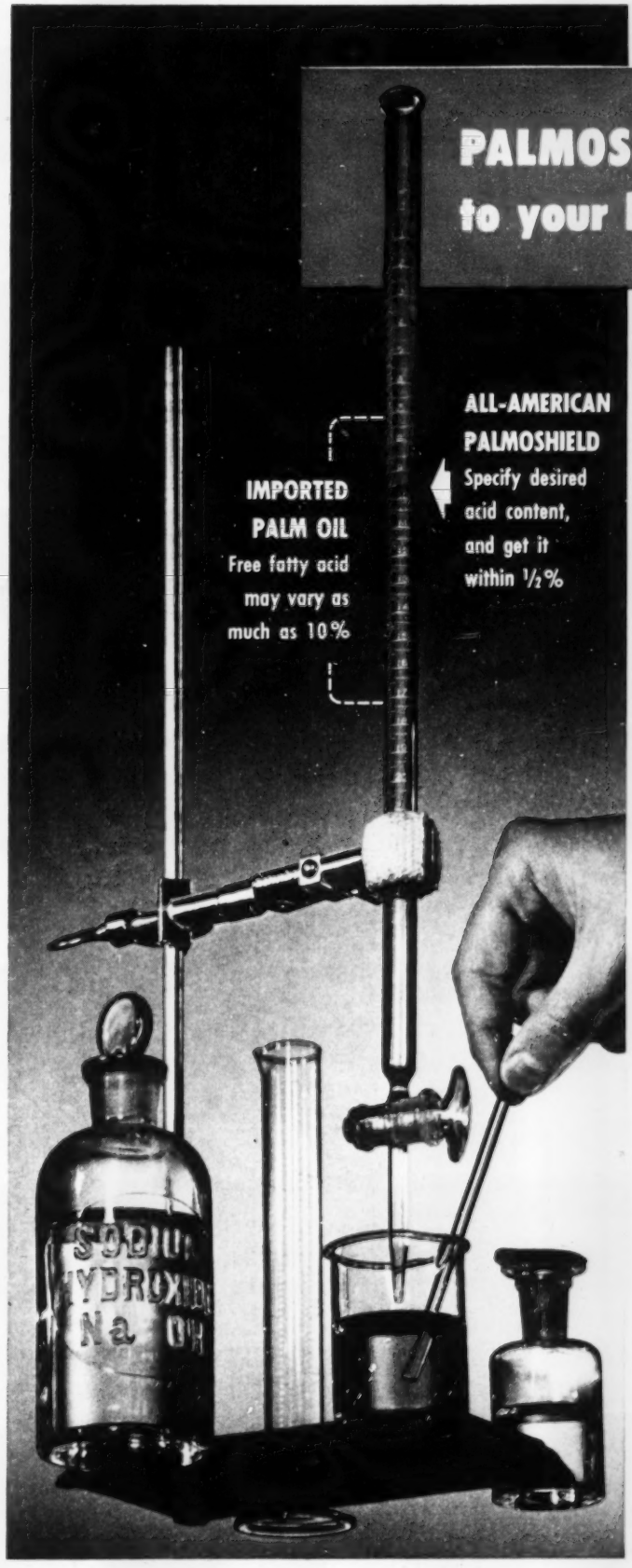
Although the text is rather technical, very good use has been made of it by applying local practices. The question has arisen in the class concerning the background of Mr. Agnew. Has he been an operating man or has he always been a consultant or theoretical man?

This question does not mean to make any reflection on Mr. Agnew's material in any manner whatsoever; in fact, to the contrary, because there have been many favorable comments and reactions among the blast furnace men taking this course.

B. K. Rigg
training adviser
Armco Steel Corp.
Middletown, O.

• *Mr. Agnew comes from a family of blast furnace men dating back to his grandfather who was the first to use Mesabi ore at the Sharpsville furnaces. Included in Mr. Agnew's practical experience are such jobs as superintendent of blast furnaces for Alan Wood Steel Co., superintendent of the Wickwire Furnaces for Colorado Fuel & Iron Corp., and a job as superintendent at the Chester Furnaces for Barium Steel Corp.—ED.*

PALMOSHIELD is tailor-made to your lubricating needs



Why take a chance . . . ?

For the first time in cold rolling operations you can have a lubricant that is tailor-made for your own needs.

For Palmoshield, the all-American replacement for palm oil, can be produced with the free fatty acid content you need within ½% (±¼%). And, Palmoshield can be applied direct, in solution, or with proportioning pumps.

Scientifically Controlled

Since Palmoshield is a scientific product man-made from domestic materials, it is subject to exact chemical control. When you specify the free fatty acid content you desire, you are assured that this percentage will not change from shipment to shipment or when stored under normal conditions.

Replaces Palm Oil

Palmoshield looks, feels and acts like palm oil; requires absolutely no changes in mill operation. Yet it is a domestic lubricant made from freely available domestic materials. Users are not dependent upon overseas shipment from foreign controlled sources.

Increases Production

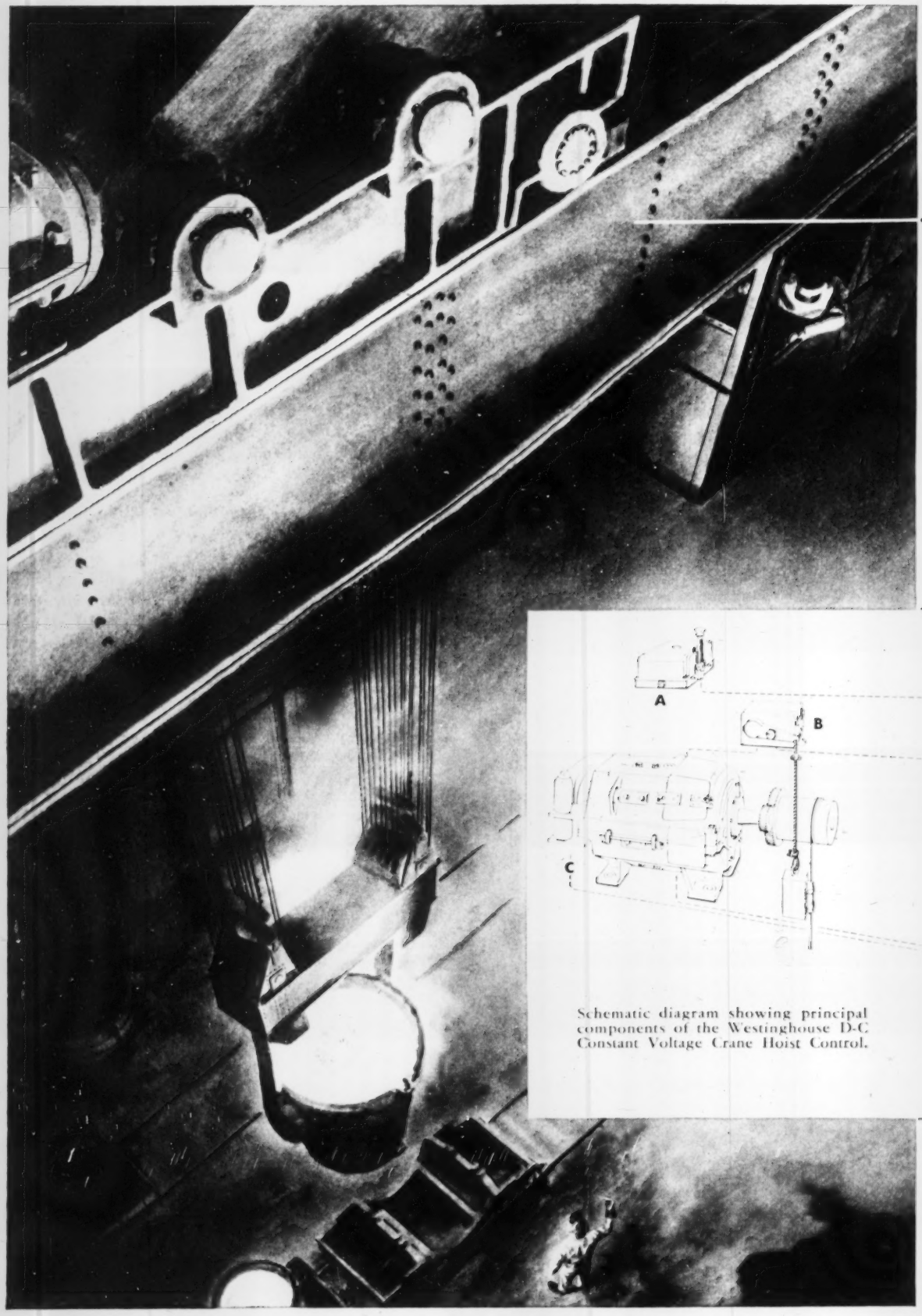
During the past year production record after production record has been set by users of Palmoshield. In one company during a test run of 20 consecutive shifts production was stepped up 15%. Already nearly two-thirds of the major tin plate mills in this country and Canada are taking advantage of this tailor-made product.

Palmoshield is available for immediate shipment in 55 gallon drums and tank car lots. For full information, and for specialized research assistance, write The Ironsides Company, 270 W. Mound Street, Columbus, Ohio.

SPECIAL LUBRICANTS and PRESERVATIVES

SHIELD PRODUCTS

IRONSIDES
PALMOSHIELD

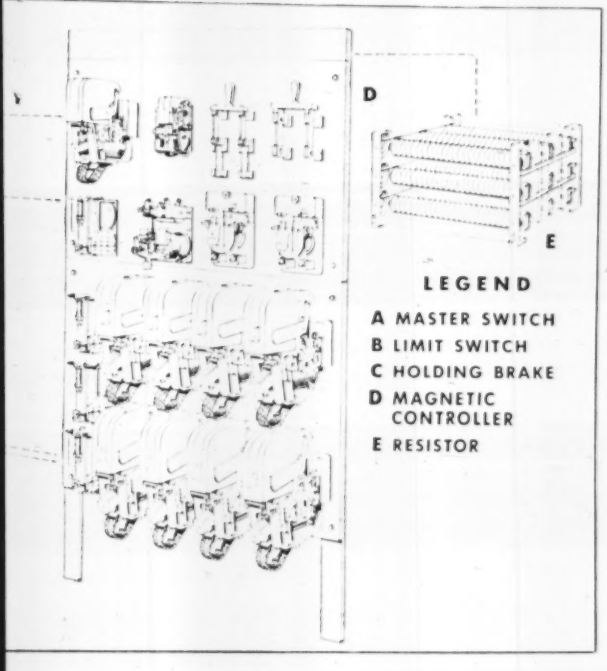


Schematic diagram showing principal components of the Westinghouse D-C Constant Voltage Crane Hoist Control.

MILL RATED muscle for heavy hoisting

Steel mill crane hoist control must have the stamina to take ceaseless beatings. It must be built of components that are mill rated . . . that keep functioning regardless of exposure to dust, dirt, heat, cold and round-the-clock hard service.

The Westinghouse D-C Constant Voltage Crane Hoist Control meets these requirements. It is built to stand up to the daily abuse found in most steel mill operations. Heavy-duty, mill-type electrical equipment is used throughout. The Type M contactors and series-wound, 600-series, d-c motor are mill rated. Dependable operation is further assured by the basic simplicity of the control system.



OPERATING CHARACTERISTICS ARE COMPLETE AND FLEXIBLE

Loads Slip Into Place due to proper proportioning of speed increments between master switch points and selection of correct resistor connections.

Slow-Speed Hoisting Is Available with empty hook. In lowering, suitable kickoff torque is obtained with careful resistor design enabling the motor to reach steady-state speed quickly without overshoot.

High Lowering Speeds Are Available when required. The high-speed lowering point has an independent adjustment to facilitate closer control at these high speeds.

Standard Control Panel contains only nine contactors and four timing relays in addition to protective equipment. All are front mounted for easy accessibility. All are standard units.

New Heavy-Duty Contactors and a combined control system and resistor design, that prevent excessive current peaks during transitions or while plugging, prolong equipment life.

Get this Descriptive Booklet B-5420

Full descriptive information on all components of the Westinghouse D-C Constant Voltage Crane Hoist Control is contained in this free booklet. Your Westinghouse representative has a copy for you. Or, you can get a copy by writing direct to: Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-27017-A

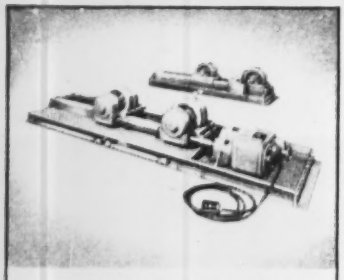
YOU CAN BE *SURE*...IF IT'S

Westinghouse

REED
ENGINEERING CO.

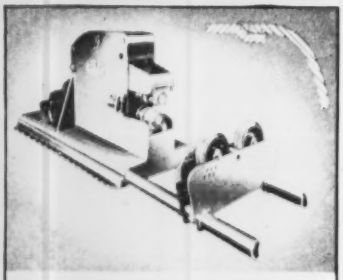
Modern Metalworking Equipment

- BENDING ROLLS
- TURNING ROLLS
- AUTOMATIC WELDING FIXTURES



REED PORTABLE TURNING ROLLS

- ★ In 5 models, capacities up to 75 tons
- ★ For hand or automatic welding, finishing operations on tanks up to 14 ft. diam.
- ★ Reversible, variable speed adjustment
- ★ Rugged, all steel construction
- ★ Built-in silent worm gear drive



REED OFFSET FORMING MACHINE

- ★ Improves automatic welding production by eliminating chill-rings and backing bars
- ★ Forms offset weld-backing joggle from tank shell
- ★ Loosens rust and mill scale
- ★ Improves shell roundness
- ★ Two models: M-2—1/16 to 3/16" plate
  M-4—3/16 to 7/16" plate

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to write us for specifications, prices, list of REED users near you. No obligation. Just write on your letterhead.

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YEARS OF ELECTRICAL PROGRESS

These bearings last longer than life . . . grease life

G-E *TRI CLAD* MOTORS LAST LONGER

ALL GREASE LIFE IS LIMITED. The best known greases dry out in time. This may be six months, seven years, or longer, depending on motor application.

SOME MOTORS ARE USELESS WHEN GREASE DRIES OUT. They can't be regreased, you lose production time . . . because your maintenance man is "sealed out."

BUT GREASE LIFE NEED NOT LIMIT MOTOR LIFE. Tri-Clad motors give long life without relubrication, plus provision for adding new grease when necessary.

ADDED GREASE IS USEFUL GREASE. Relubrication puts fresh grease in storage in bearing housing . . . as motor operates, grease oils migrate to bearing as needed.

TRI-CLAD MOTOR BEARING IS EASIEST TO REGREASE. Do it on the job, with motor running . . . no dismantling . . . no trip to a service shop.

TRI-CLAD MOTOR BEARING IS BETTER PROTECTED. Completely enclosed housing has *longer seals* to keep dirt out, *larger grease supply*, and *scientific design* for continual grease migration.

THIS PRACTICAL BEARING DESIGN is one more reason why G-E Tri-Clad motors give better service . . . added life. Order through your nearby G-E Apparatus Sales Office or authorized G-E agent or distributor. General Electric Company, Schenectady 5, N. Y.

752-18

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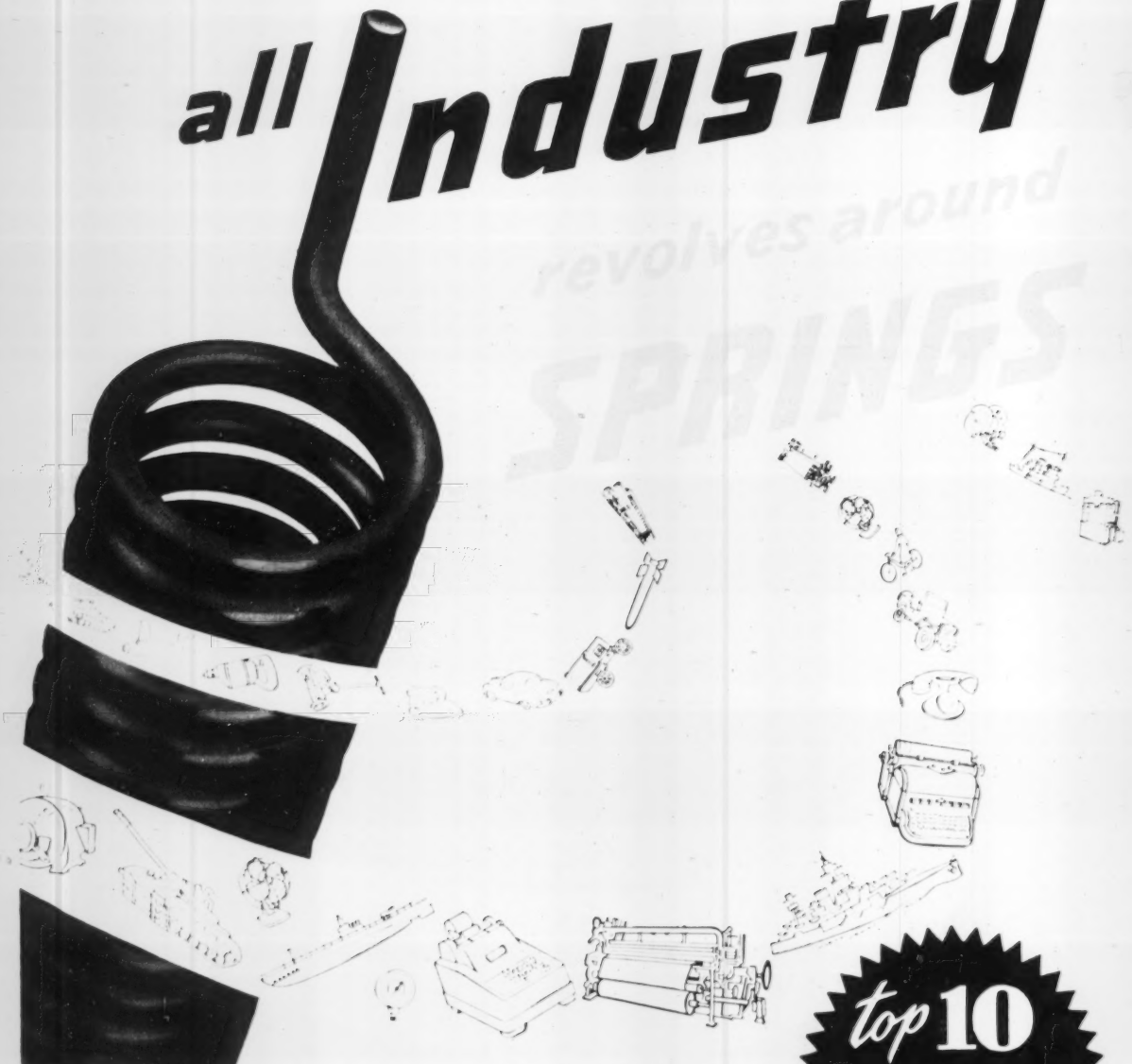
GENERAL ELECTRIC

all Industry

revolves around SPRINGS



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top 10 SOURCES for Mechanical Springs

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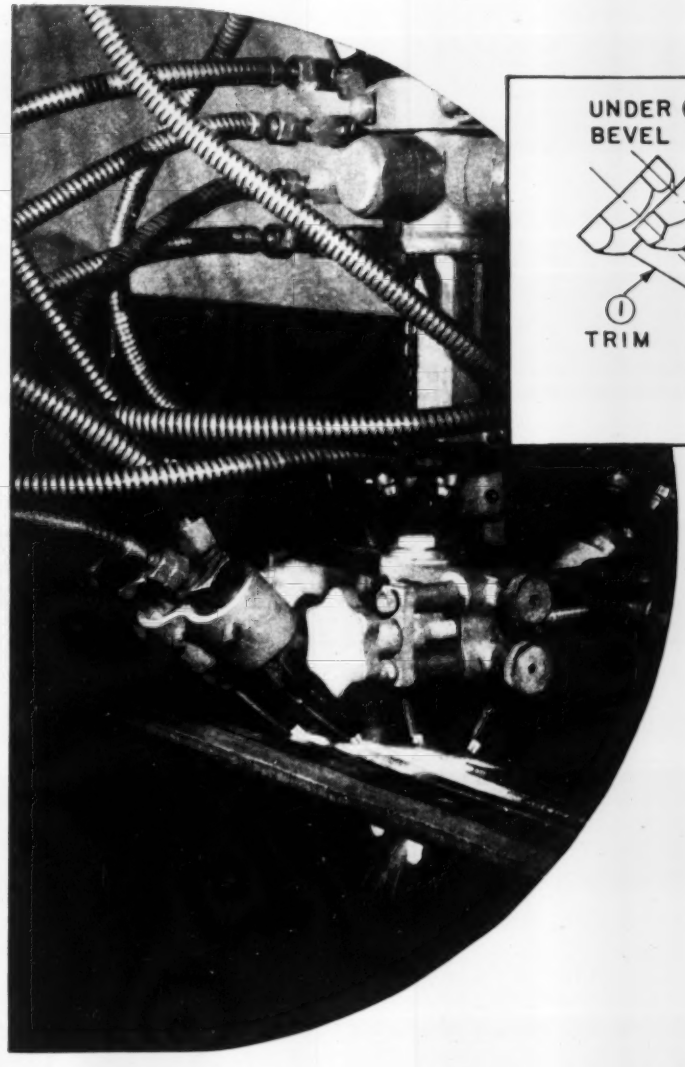
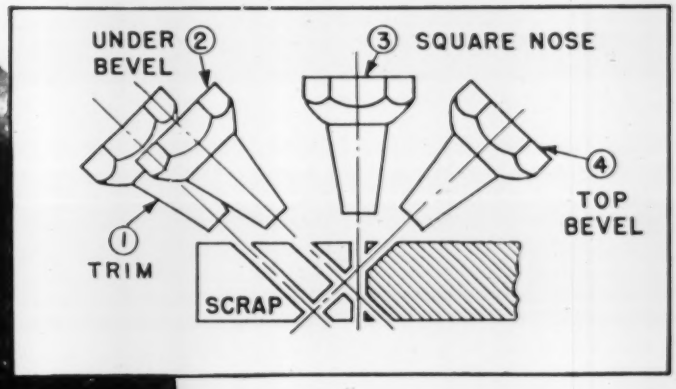
DIVISIONS OF
ASSOCIATED SPRING CORPORATION

IN CANADA - The WALLACE BARNES CO., Ltd., Hamilton, Ontario





One pass gets armor plate or *any* plate ready for welding

Swift-moving oxy-acetylene flames prepare steel plate edges for welding in a fraction of the time required by mechanical methods. Multiple nozzles, cutting in different planes simultaneously, slash with ease through any commercial thickness. *Just one pass to "finish" dimensions* turns out a square edge, single bevel, single bevel and nose, double bevel, double bevel and nose, or J-groove and nose. Edge preparation costs tumble; production booms.

LINDE's oxygen-cutting methods are simple and flexible. They are economical and easy to use. They cut plates so smoothly and accurately that *no machining is necessary*—edges are ready to weld "as cut". Rigid fit-up and contour specifications are easily met. Yet, initial investment in OXWELD flame-cutting equipment is only a fraction of that for comparable machine tools. Upkeep over the years is extremely low.

On-the-job power needs are negligible. Reaction of cutting oxygen with hot steel does all the work. Only fractional horsepower is required to move the cutting nozzles along a straight line, radius, or any guided path over the line of cut.

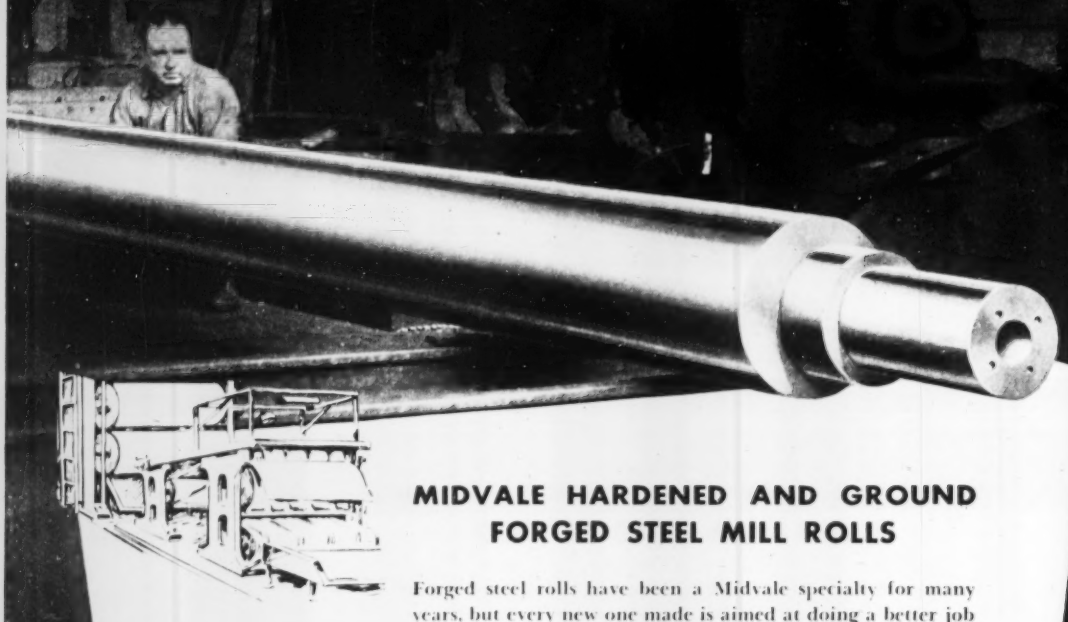
For further details, telephone or write today. LINDE AIR PRODUCTS COMPANY, a Division of Union Carbide and Carbon Corporation, 30 E. 42nd St., New York 17, N. Y. Offices in Other Principal Cities. In Canada: Dominion Oxygen Company, Limited, Toronto.

The terms "Linde" and "Oxweld" are registered trade-marks of Union Carbide and Carbon Corporation.

Linde
Trade-Mark

Products and Processes for MAKING, CUTTING, JOINING, TREATING, AND FORMING METALS

AIMED AT BETTER ROLLING



MIDVALE HARDENED AND GROUND FORGED STEEL MILL ROLLS

Forged steel rolls have been a Midvale specialty for many years, but every new one made is aimed at doing a better job than ever before. Skill and experience of Midvale craftsmen assure rolls built to your most exacting specifications of hardness and finish. Modern equipment and quality control —from furnace to finished roll—produce rolls unsurpassed in quality and performance.

Whatever your needs for heavy equipment in industry Midvale can assure you of precision and performance. Whether it is a roll for your mill . . . roll shells for mining and cement industry . . . pressure vessels for the chemical and petroleum industries . . . rings for turbines and gears . . . or castings and forgings for any industry . . . Midvale can make them to your most exacting specifications.

- Pressure Vessels
- Forgings and Rings
- Hardened and Ground Steel Rolls
- Corrosion and Heat Resisting Castings
- Ordnance and Armor

THE MIDVALE COMPANY
NICETOWN, PHILADELPHIA, PENNA.
OFFICES: NEW YORK • CHICAGO • PITTSBURGH
WASHINGTON • CLEVELAND • SAN FRANCISCO

MIDVALE

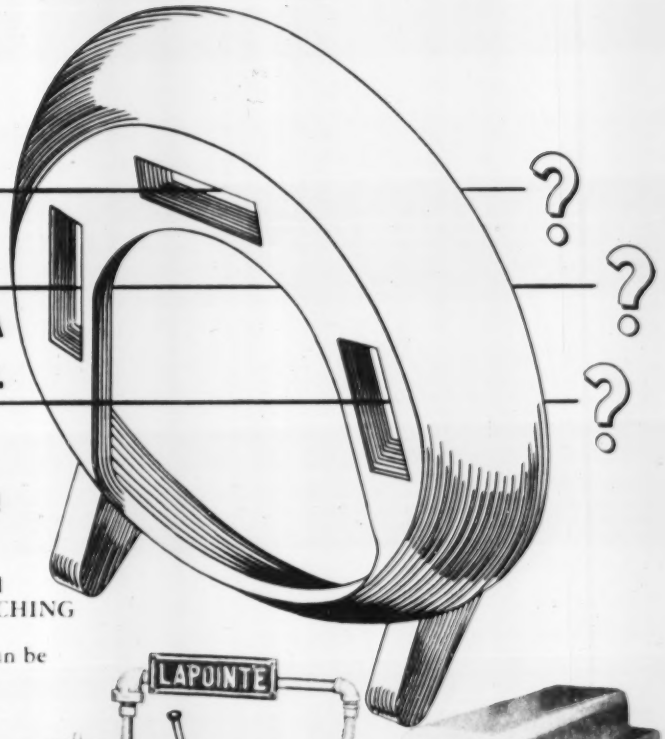
Custom Steel Makers to Industry

PRODUCERS OF FORGINGS, ROLLS, RINGS, CORROSION AND HEAT RESISTING CASTINGS

HOW WOULD YOU

MACHINE THE ENDS OF THESE
3 RECTANGULAR HOLES, AT AN ANGLE,
IN THIS

COMMANDER'S CUPOLA
forged of ARMOR STEEL



it's easy and accurate
with **LAPOINTE BROACHING!**

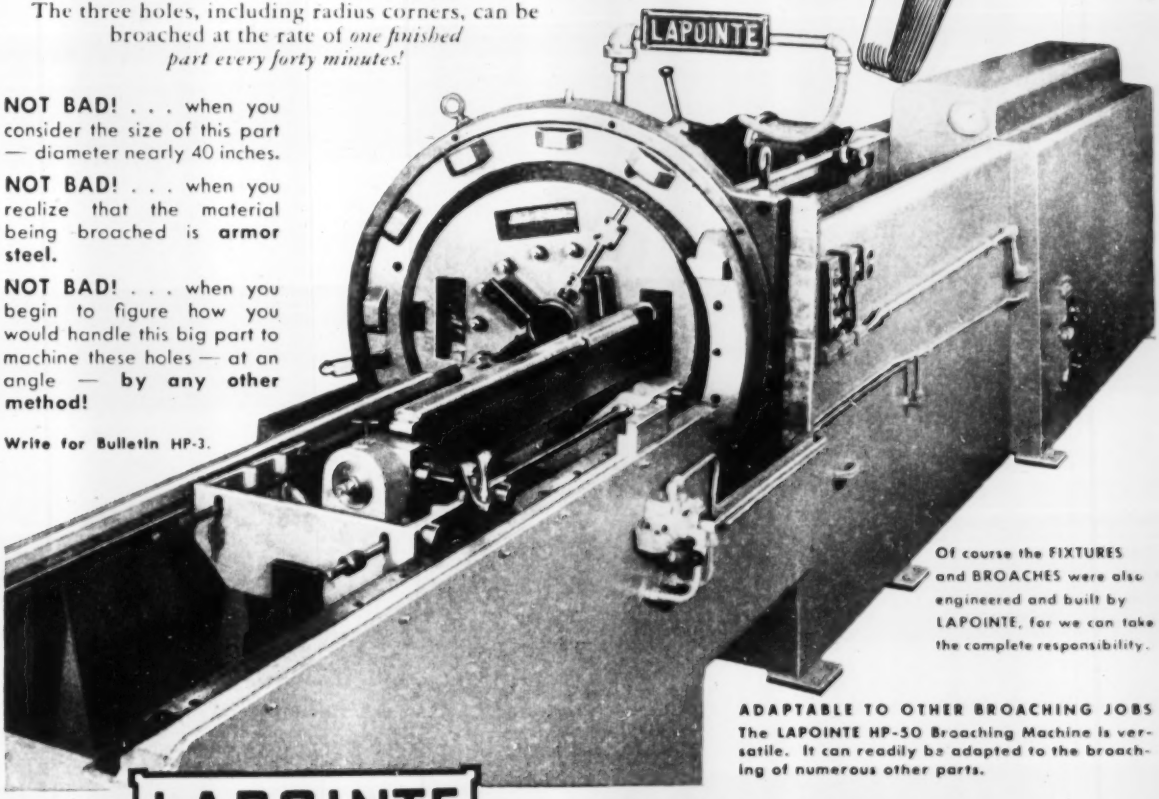
The best way to do it is to use this rigid 25-ton LAPOINTE HP-50 Horizontal BROACHING MACHINE with 72-inch stroke. The three holes, including radius corners, can be broached at the rate of *one finished part every forty minutes!*

NOT BAD! . . . when you consider the size of this part — diameter nearly 40 inches.

NOT BAD! . . . when you realize that the material being broached is **armor steel.**

NOT BAD! . . . when you begin to figure how you would handle this big part to machine these holes — at an angle — **by any other method!**

Write for Bulletin HP-3.



Of course the FIXTURES and BROACHES were also engineered and built by LAPOINTE, for we can take the complete responsibility.

ADAPTABLE TO OTHER BROACHING JOBS
The LAPOINTE HP-50 Broaching Machine is versatile. It can readily be adapted to the broaching of numerous other parts.

THE LAPOINTE MACHINE TOOL COMPANY

HUDSON, MASSACHUSETTS • U. S. A.
Branch Factory: Watford, Herts., England

HUDSON LAPOINTE MASS

THE WORLD'S OLDEST AND LARGEST MANUFACTURERS OF BROACHING MACHINES AND BROACHES

For Sheet, Plate or Powder... a BLISS **Hydraulic** Press for Every Operation

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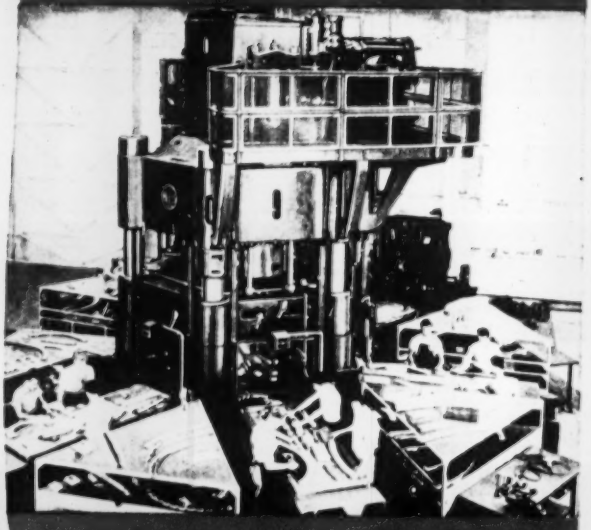
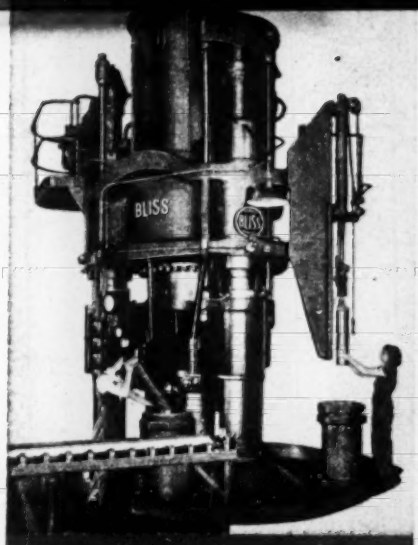
REDRAWING

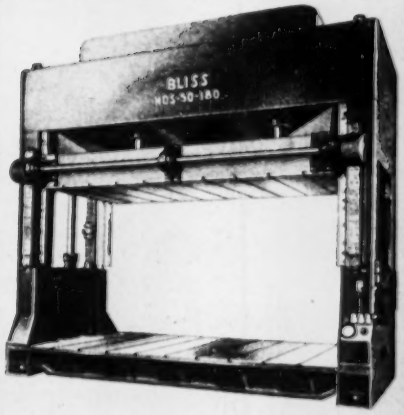


RUBBER PAD FORMING

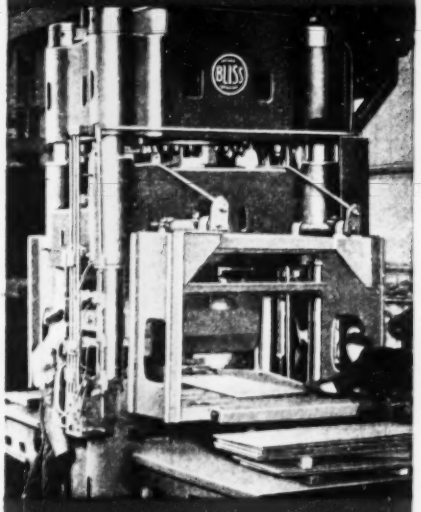


HEADING

COINING



DIE SPOTTING



STRAIGHTENING

Certain fundamental advantages of hydraulic presses make them ideal for many defense and civilian production jobs. That's why Bliss has developed one of the most complete hydraulic press lines available. Whether you're working with sheet, plate or powder . . . whether your needs involve single, double or triple actions, housing or open-rod frames, moving-up or moving-down types, Bliss has a hydraulic press for every operation.

E. W BLISS COMPANY, CANTON, OHIO

E. W. Bliss (England) Ltd., Derby, England

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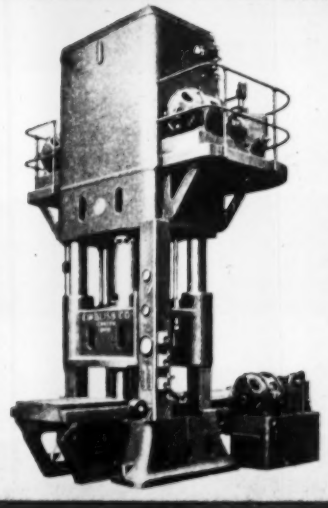
Presses, Rolling Mills, Special Machinery

For the right press for a given job...

Hydraulic **or Mechanical...**

It's Bliss



HOT FORGING

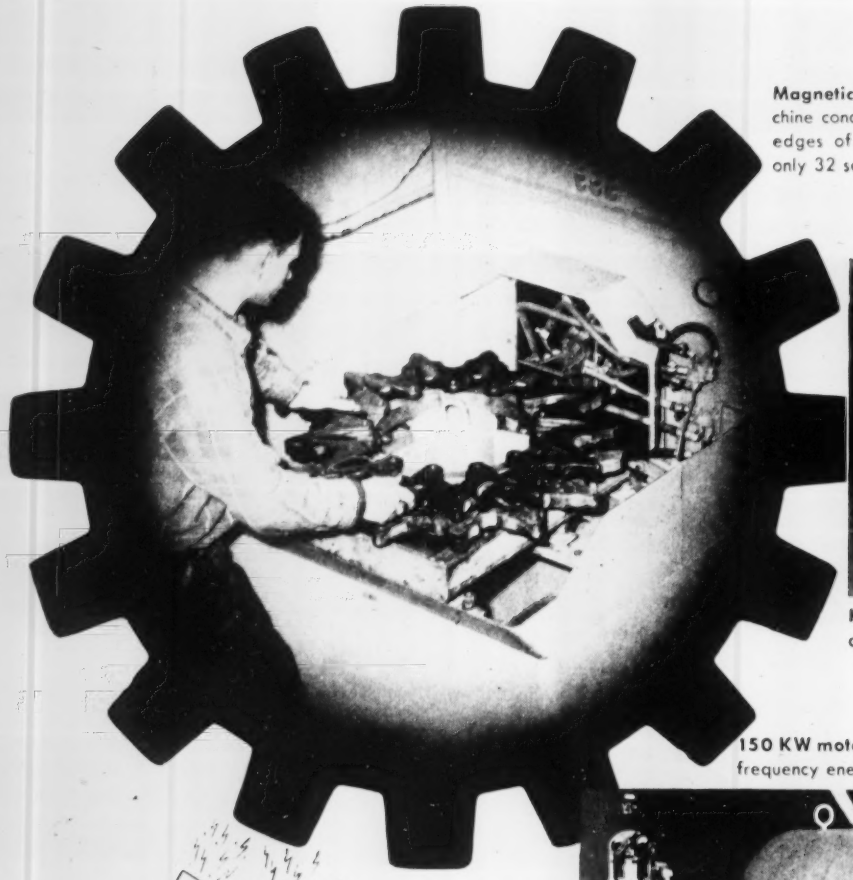
POWDER METAL FORMING

700-Page Handbook Tells How to Use Presses Efficiently

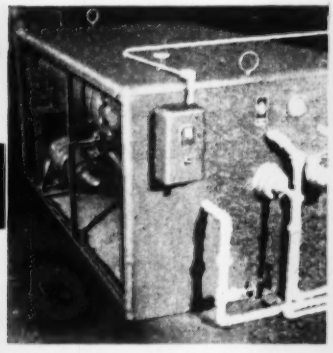
Bliss Power Press Handbook. 450 illustrations. Sections on: Easy methods of computing press jobs • How to select proper press • Engineering tables • Die illustrations • Glossary of terms • Plus service section on all Bliss presses.

Price $7.50

E. W. BLISS COMPANY
Handbook Dept.
Canton, O.

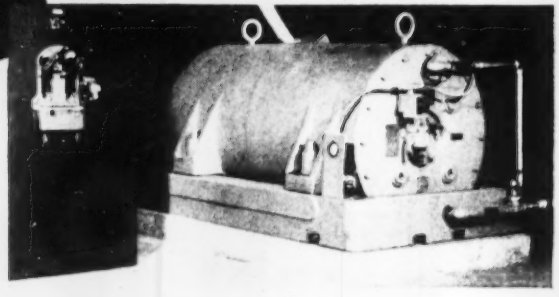


Magnetic field of induction hardening machine concentrates terrific heat on working edges of sprocket tooth, hardening it in only 32 seconds.



Heat exchanger and soft water circulating pump used for quenching.

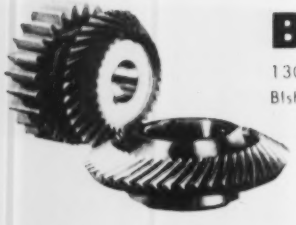
150 KW motor-generator supplies high frequency energy (10,000 cycles) to inductor.



Induction Hardening

Induction hardening is a quick metal heat-treating process which forms an homogeneous, nodular structure free from the usual needle-like crystals resulting from furnace hardening. Induction hardening controls absolutely the depth of penetration and pattern of the hardened surface, retains original ductility of the core, and holds distortion to an infinitesimal degree.

- Unusual equipment—yes. But it enables BRAD FOOTE to produce gears, in its own shop, with the ultimate in wearability.
- Induction hardening is another BRAD FOOTE service in our complete control of quality gear manufacturing. It is further proof that "no one shares our responsibility."



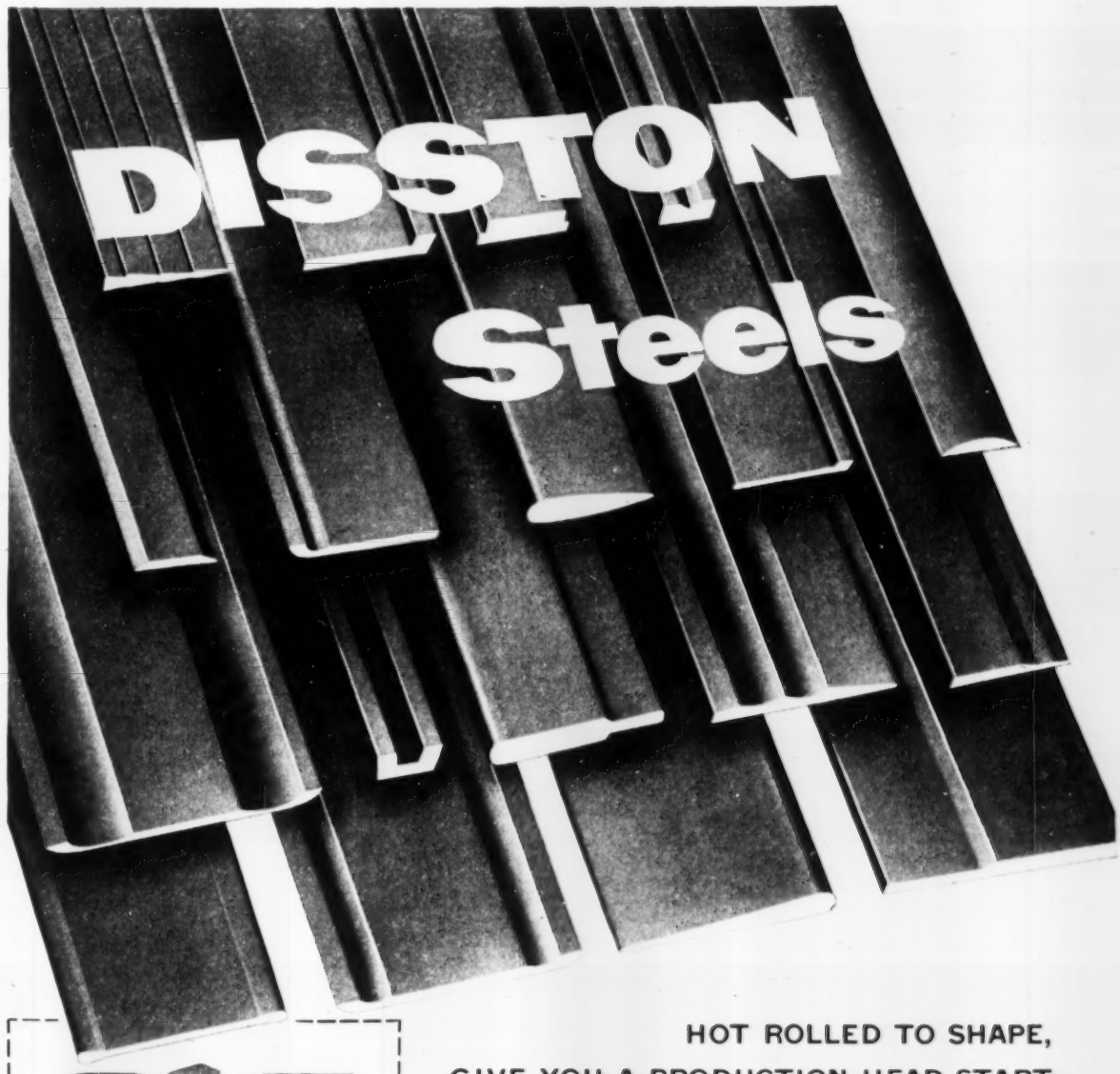
BRAD FOOTE GEAR WORKS, INC.

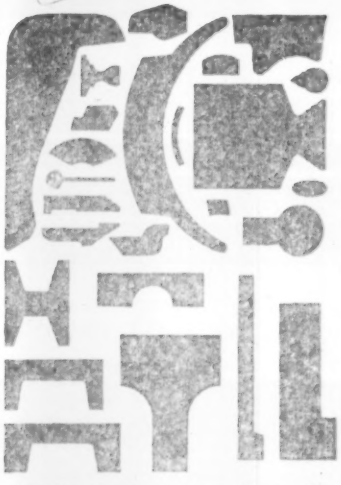
1309 South Cicero Avenue • Cicero 50, Illinois
BIshop 2-1070 • OLympic 2-7700

subsidiaries

AMERICAN GEAR & MFG. CO.
Phone: Lemont 920
Lemont, Illinois

PITTSBURGH GEAR COMPANY
Phone: ATlantic 1-9950
Pittsburgh 22, Pennsylvania





A few of the many forms of Disston Hot Rolled Shapes now being used in industry.

HOT ROLLED TO SHAPE, GIVE YOU A PRODUCTION HEAD-START

It may be money-saving news to you that Disston can relieve you of much of the overhead in machining by delivering Disston Hot Rolled Steel Shapes to meet or closely approximate your specifications. These steel- and labor-saving shapes can be rolled in a variety of forms that should easily offer production short-cuts to you. Tolerances are close, and finishes are exceptionally fine. Disston Shapes can be made in either alloy or carbon steels, both electric and open hearth grades. Disston engineers and metallurgists are ready to work with you today. Write us, giving your needs.

HENRY DISSTON & SONS, INC.

226 Tacony, Philadelphia 35, Pa., U.S.A.

We have just one axe

CARBO

TRADE

"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company, Niagara Falls, N. Y.

to grind . . . YOURS!

You get UNBIASED COUNSEL based on all abrasive methods

Your business, in mass production of parts or finished assemblies, is the problem of generating close tolerance sizes, of producing high surface finishes, of removing stock. The business of CARBORUNDUM is the exclusive ability to recommend and furnish you the specific type of abrasive product which will give you highest quality at lowest cost, on every operation you perform.

Take snagging, for instance. With abrasives there are at least 9 different ways to remove stock at high rates. That means the odds are 9 to 1 there's a better, lower cost way than the one you're using now. How can you be *sure?* By asking CARBORUNDUM . . . for CARBORUNDUM alone has a complete, branded line of grinding wheels *and* abrasive belts *and* tumbling and polishing grains . . . and only CARBORUNDUM can recommend without bias, on the sole basis of what's best for you.

Or suppose you're manufacturing shears . . . you must remove scale with tumbling nuggets—finish with abrasive belts—sharpen with grinding wheels—polish with abrasive grain. CARBORUNDUM alone can give you *one-source control* of abrasive quality, on every type of abrasive you use . . . quality that's constant, identical, dependable—thus economical.

Several ways to do one operation? Call in CARBORUNDUM. Several processes on one part? Call in CARBORUNDUM. Either way, you win.

Call your CARBORUNDUM *Salesman or Distributor* today!

He's your best bet for complete stocks, prompt delivery . . . and best of all, experienced counsel on *every* new development in the *entire* field of abrasives. He's in the yellow pages under "Abrasives" or "Grinding Wheels." Phone him today—it's to your profit!

Ready now—your free copy of the new big COATED ABRASIVE SELECTOR catalog . . . containing detailed recommendations for both machine and hand sanding operations on tough and soft metals, glass, plastic, wood. Phone for it today.

RUNDUM

MARK

. . . the ONLY source for EVERY abrasive product you need

"CATERPILLAR" demands uniformity in every component—they get it with Pittsburgh Seamless Cold-Drawn Tubing

The uniformly excellent performance of "Caterpillar" built products is no mere chance. They get it by insisting on uniformity in every component of their equipment. For example, thousands of the track pin bushings shown being machined above are made of Pittsburgh Seamless Cold Drawn Tubing. It has the necessary size accuracy and finish to facilitate machining—the uniform physical properties that make big, high-speed production runs possible. The result is that the parts made from Pittsburgh Seamless have the consistent high quality found in all "Caterpillar" built products.

For a uniform, free machining cold-drawn mechanical tubing that helps improve your products—speed production, specify Pittsburgh Seamless.

Pittsburgh Seamless Cold Drawn Tubing

a product of **Pittsburgh Steel Company**

Grant Building, Pittsburgh 30, Pa.

What's Screwy?

by Phillips

"Oh, he never bothers to turn it on. He's just fascinated by the beauty of those Phillips Cross-Recessed-Head Screws."

PERFECTLY MATED! Only Phillips Drivers are perfectly mated to Phillips Screws. Look for the name Phillips on the shank.

BEAUTY is only one of many reasons why Phillips Screws help you build a better product. These screws set up tighter, resist vibration. They are distinctively designed to give maximum strength of head, maximum driver strength. What's more, they cut driving time up to 50%, eliminate driver skids and split screw heads. Whether you use Phillips Wood, Machine, Tapping Screws or "Sems", you save time, work, money.

PHILLIPS *Cross-Recessed-Head* SCREWS

X marks the spot . . . the mark of extra quality

AMERICAN SCREW COMPANY • ATLANTIC SCREW WORKS, INC. • THE BLAKE & JOHNSON CO.
CENTRAL SCREW COMPANY • CONTINENTAL SCREW COMPANY • THE EAGLE LOCK COMPANY
ELCO TOOL AND SCREW CORPORATION • GREAT LAKES SCREW CORPORATION • THE H. M. HARPER CO.
THE LAMSON & SESSIONS COMPANY • NATIONAL LOCK COMPANY
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PHOENIX MANUFACTURING CO. • ROCKFORD SCREW PRODUCTS CO. • SCOVILL MANUFACTURING CO.
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TODAY'S . . . AND THE FUTURE'S . . . FINEST FASTENER

NEW SOLUTIONS FOR OLD FINISHING PROBLEMS

ENTHONE CAN SHOW YOU HOW TO DO ANY OF THE FOLLOWING:

1. Remove rust and scale from steel in an alkaline solution ***without any attack on the steel***
2. Strip nickel, lead, tin, solder, silver and copper from steel without any attack on the steel
3. Electroplate on aluminum for soldering
4. Remove excess silver solder from steel
5. Phosphate and clean steel in one operation
6. Prevent rusting of steel during drying or storage
7. Shorten alkali cleaning time to seconds.
8. Strip enamels from plastics
9. Remove heat scale from copper alloys without etching the base metal
10. Chromate zinc and cadmium for high salt spray resistance

KEEP UP TO DATE. *Write for check list of Enthone literature on over 60 products and processes for better metal finishing.*

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INCORPORATED
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METAL FINISHING PROCESSES

ELECTROPLATING CHEMICALS

BUILDING A GREATER AMERICA

Cast of character

You won't find many stage directors around a machine shop. However, machines play many important roles in the drama of modern industry, and it's mighty important that they measure up to their roles—that they play their part as capably as the well-cast actor in a stage presentation.

You can count on a fine production when you rely on Sun Ship's skilled workers and versatile shops to produce the special machinery needed for a job. From the microscopic x-ray of the metal that goes into its making, to the precise engineering that means power and efficiency in operation, Sun Ship standards meet the highest test. The machinery plant and foundry, an important unit in our plant, is a complete machinery-building plant, with machine shops, pattern shop and foundry. The shop and foundry section has been in operation since 1872, advancing from building Corliss engines, steam marine engines, to Diesel engines and special machinery. Now, modernized and enlarged, as a unit of Sun Ship, it has won world-wide renown in building all types of special machinery to serve in building a greater America.

Sun

SHIPBUILDING & DRY DOCK COMPANY

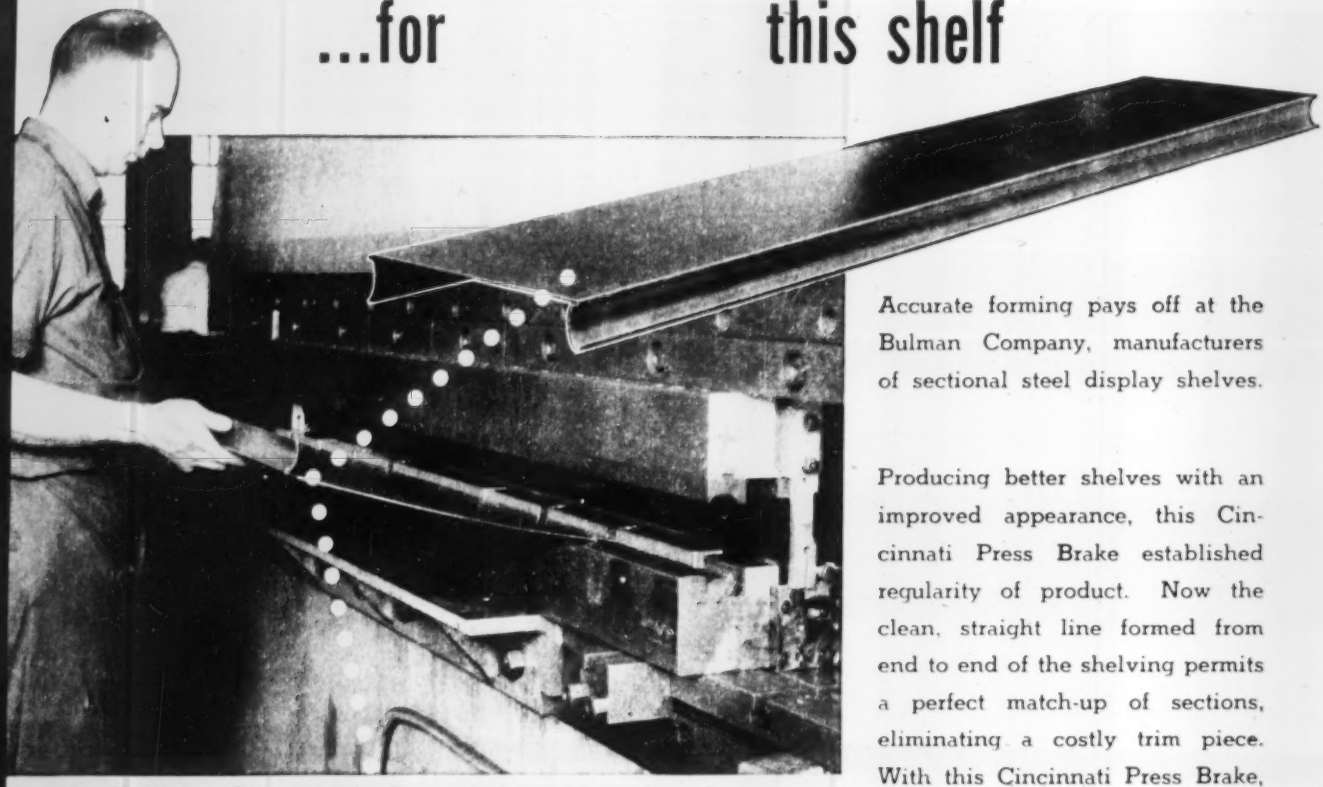
SINCE 1916

ON THE DELAWARE • CHESTER, PA.

25 BROADWAY • NEW YORK CITY

Outstanding

...for this shelf



Note the clean, straight lines of the moldings formed on the shelf by this Cincinnati Press Brake.

These outstanding sectional Bulman display shelves fit accurately.
Photo courtesy E. O. Bulman Mfg. Co., Inc., Grand Rapids 2, Michigan

Accurate forming pays off at the Bulman Company, manufacturers of sectional steel display shelves.

Producing better shelves with an improved appearance, this Cincinnati Press Brake established regularity of product. Now the clean, straight line formed from end to end of the shelving permits a perfect match-up of sections, eliminating a costly trim piece. With this Cincinnati Press Brake, discards are eliminated, assembly is accurate—production time cut—and the product improved. Investigate—you may cut costs and improve products in your plant with a Cincinnati All-Steel Press Brake.

Write for our NEW 72 page Press Brake Catalog B-4.

is necessary...

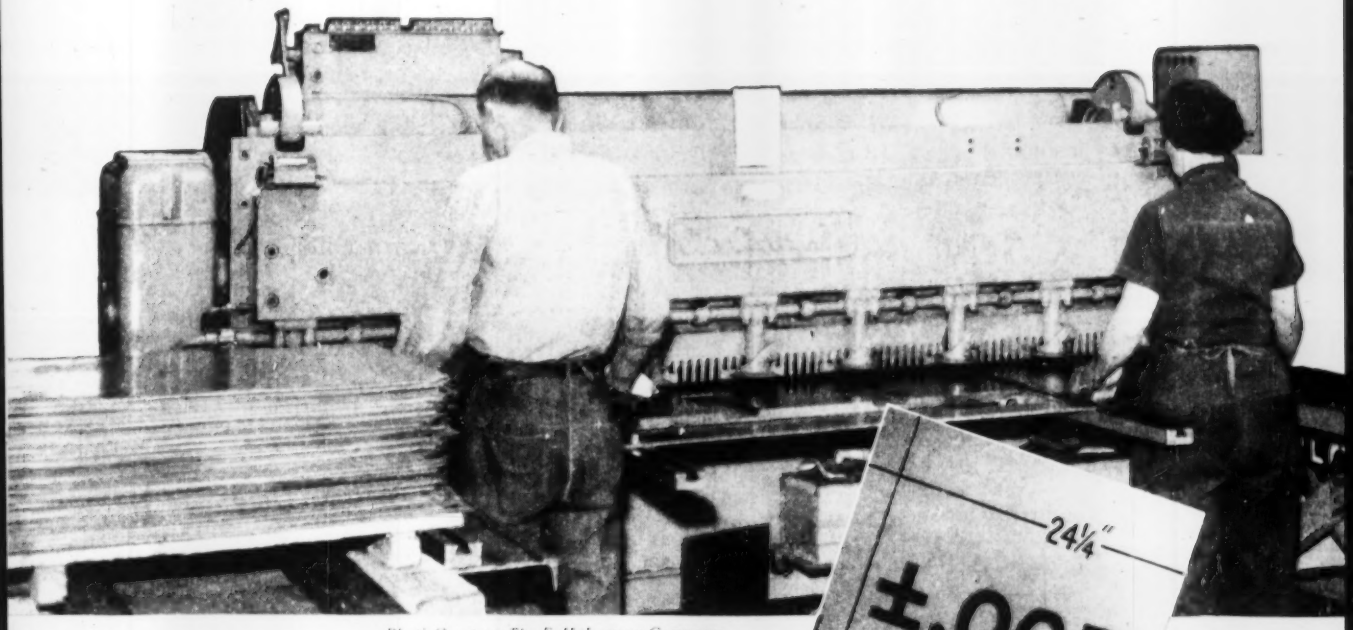


Photo Courtesy The F. H. Lawson Company

...for

400 blanks an hour to ±.005"

All along the line this accurate blank saves money!

At 400 an hour, accurate steel blanks, 24¼" x 28⅝", are produced in lots of 10,000 from 26 gauge stock sheets.

Costs are low because of the accurate performance, rapid gauging, ease of control and safety features of Cincinnati All-Steel Shears. One and one-half to two million cuts are made before knives need regrinding—an important factor in the low cost.

The shear is so accurate that all along the production line rejects are very low. Gauging for forming and bending operations is simple and rapid, assembly is smooth, time and money are saved, and a high quality of product is maintained.

Write for your Shear Catalog S-5. Consult our Engineering Department on your shearing problems.

These accurate blanks are held to tolerances of ± .005" on Cincinnati Shears in the shops of The F. H. Lawson Company, manufacturers of medicine cabinets, pails and all sorts of containers.

THE CINCINNATI SHAPER CO.

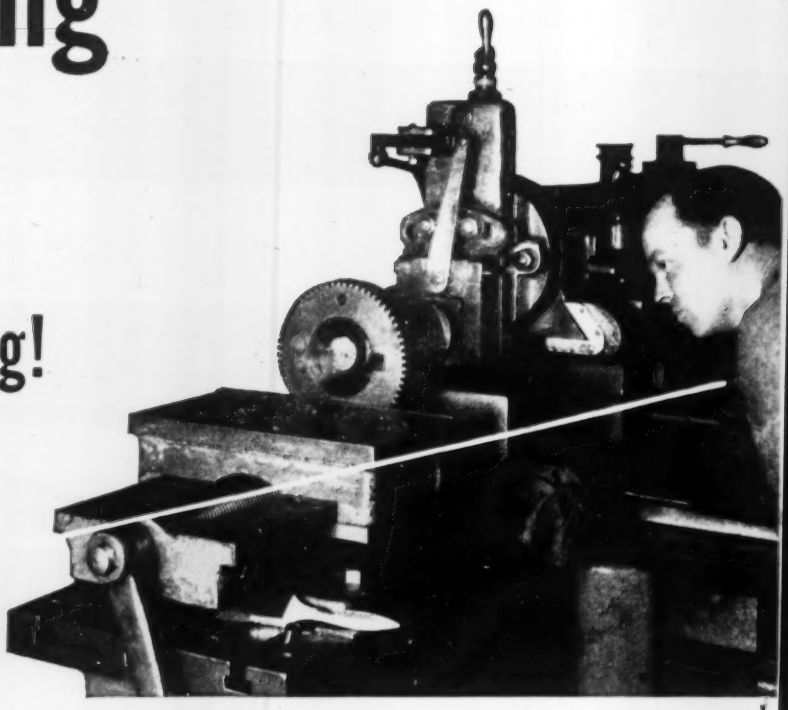
CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

CINCINNATI

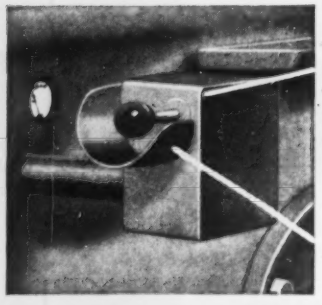
Outstanding

...and

effect a 30% saving!



The time required to shape 7 separate internal oil grooves in these steel sleeves was reduced from 12.5 minutes to 8. minutes, due to the Cincinnati Electro-Magnetic Clutch and Brake.



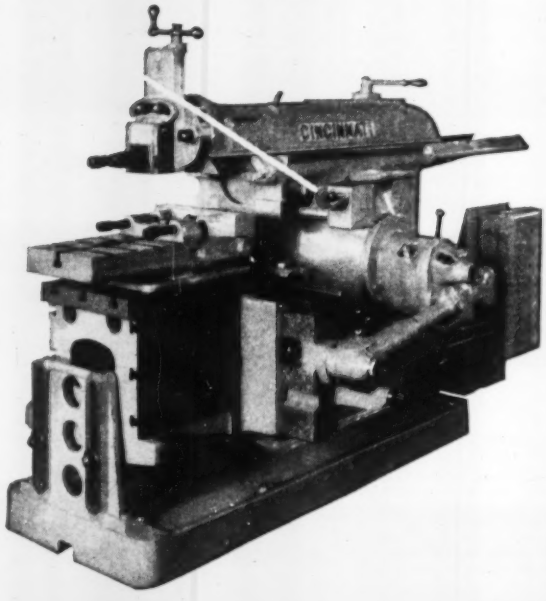
NEW CINCINNATI ELECTRO-MAGNETIC CLUTCH AND BRAKE. . . .

Where starts and stops are numerous they become a serious time waster!

The New Cincinnati Magnetic Clutch and Brake, with its single, convenient control lever, converts waste time into productive time. It gives the operator the fastest, simplest and most accurate control of his Shaper.

This powerful clutch and brake requires no shutdown for adjustment, and has a long, maintenance-free life, both time-saving and profitable features.

Write for Catalog N-5 for the complete line.



CINCINNATI

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

The Metalworking Outlook

February 16, 1953

Irony on Wages

An estimated 2000 of the 7000 cases that were pending before the old Wage Stabilization Board probably would have been thrown out (p. 45). The decontrol action, of course, automatically approves the 2000 questionable ones. The irony is that many of those 2000 were submitted by managements which knew they wouldn't pass but allowed the unions to talk them into debatable matters because they thought they would never be allowed anyway.

Mining Subsidies?

Watch the fate of S-869, a bill introduced by Sen. Edwin C. Johnson (Dem., Colo.) which would set up a Metals Credit Corp. to subsidize production from marginal mines. The proposed corporation would function just as Commodity Credit Corp. operates now in subsidizing farmers. The measure has wide Republican support and stands a good chance of passage.

Regarding Briar Pipes

Briar smoking pipes assume a new importance for metalworking, at least for the next couple of weeks. Between now and Feb. 28 President Eisenhower must act on a Tariff Commission recommendation for increased duties on imported briars. The action in this case will be the first real tipoff on the President's tariff philosophy. Domestic makers of bicycles, textile machinery and many other metalworking products will be affected.

SDPA To Continue

You can expect the Small Defense Plants Administration to continue as an independent government agency outside the Commerce department. Strong pressure from such organizations as National Association of Independent Business will help preserve SDPA's present position, but legislators probably will resist efforts to expand its functions still further. SDPA particularly wants broader power to make loans to small business. That's now handled by the RFC acting on SDPA recommendations.

Needed: More Basic Research

Look for the Eisenhower administration to put greater emphasis on federal support for basic research. The emphasis in the past has been strongly on applied research and development, but the government-supported National Science Foundation wants a shift because applied study is not possible without basic investigations first. Federal funds for applied research and development in nonprofit institutions totaled $246.5 million in fiscal 1952, while basic research support in such institutions totaled only $71.1 million.

Tight, but Adequate

Manufacturers' working capital today is tight but adequate. Nine out of ten of the companies surveyed by National Industrial Conference Board indicated an adequate working capital but no fat. The

Production Engineering News—p. 71 The Market Outlook—p. 139

outlook among metalworking firms is poorest in the special industrial machinery industry. Less than 25 per cent of the co-operating metalworking companies reported that they experienced a lag in collections during 1952. Nearly half of the nonmetalworking firms experienced delays.

Hedge Against Over-Confidence

Is industry over-confident about business prospects? National Association of Credit Men lists these "don'ts" as a hedge against too much optimism: Don't over-expand. Don't gamble on increased production facilities being able to pay out on this year's sales. Don't load up on inventories. Don't distribute such high dividends that you drain your cash reserves. Don't assume that the new administration automatically provides you with advantages in your labor relations. Don't assume that federal taxes will be reduced.

New Development

Lewis Welding & Engineering Corp., Bedford, O., has developed a new die forge casting machine which makes possible new economies in casting production. The device employs the cold-chamber method of injection but introduces a new principle which provides for rapid fill while the metal is molten and unusually high final squeezing pressure. The machine also features a new method of clamping the dies together, known as the "Hydra-Lock," which develops a final clamping pressure of 650 tons.

Straws in the Wind

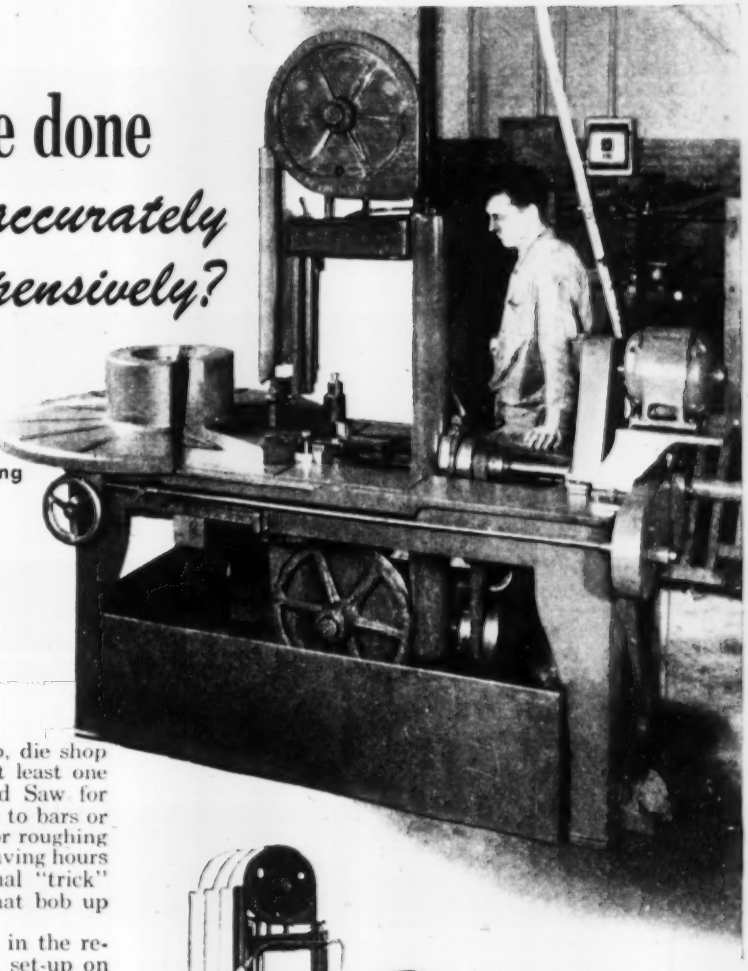
About 85 per cent of the Doehler-Jarvis Corp. shares were voted in favor of the company's sale to National Lead Co. . . . Bethlehem Pacific Coast Steel Corp. has a certificate of necessity to write off in five years for tax purposes half of its $278,000 expansion at South San Francisco . . . The Council of Economic Advisors will probably be disbanded; dismissal notices have just gone out to the council's staff . . . The formality of electing David J. McDonald president of United Steelworkers of America occurred Feb. 10.

What Industry Is Doing

Mill supply houses—good indicators of near-future metalworking production—are expecting a high and steady sales volume throughout 1953 (p. 43) . . . Steel production in January set a new monthly record of 9,888,000 net tons (p. 44) . . . The dropping of wage controls won't much change the 1953 labor pattern of many small strikes and stiff resistance to high wage demands (p. 45) . . . The need for standardized steel highway products and improved road machinery are emphasized at the annual convention of the American Road Builders' Association in Boston (p. 46) . . . Output of plastic pipe, around 15 million pounds in 1952, may jump anywhere from 25 to 100 per cent this year (p. 47) . . . Stockpiling of machine tools, as ok'd by the Vance Committee, is also approved by the armed services (p. 49) . . . How satisfactory a customer is the U.S.? Specific gripes and possible remedies are outlined on pp. 54 and 55.

How else could this job be done

so easily, so accurately and so inexpensively?

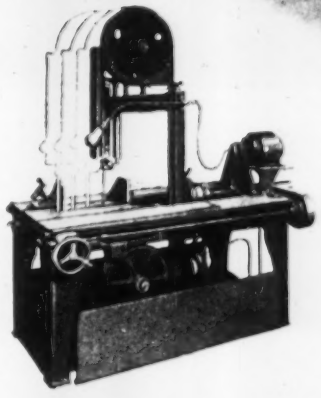


Segmentation of 42″ Steel Casting

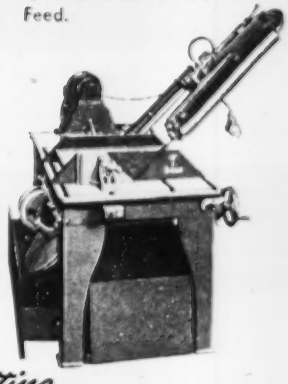
Every tool room, machine shop, die shop and maintenance department needs at least one No. 8 MARVEL Metal-cutting Band Saw for cutting off anything from ⅛″ drill rod to bars or billets of 18″ x 18″ cross-section . . . for roughing large work to size and shape, thereby saving hours of machining . . . for those occasional "trick" jobs, impossible on any other saw, that bob up in every plant.

Odd shapes that can't be held in the removable, quick-action vise, are easily set-up on the No. 8's large, T-slotted work table. MARVEL Overload-Relief Power Feed insures accurate cuts under the most adverse conditions because blade pressures are automatically held within limits which are pre-set instantly for each job. The blade is never forced beyond its capacity to efficiently and accurately remove metal . . .

Close limits are further assured through the work being clamped rigidly to the bed of the saw and the blade power-fed through it instead of pushing the work through the blade. This is also true in miter cutting, as the blade column—*not the work*—is swung to the required angle. The handiest, most versatile machine tool, it is also the busiest in most shops.



This double exposure illustrates how the blade maintains its vertical position while moving into and through the work, impelled by the automatic MARVEL Overload-Relief Power Feed.



Column set at angle to cut 45° miter on 18″ beam. Entire saw column can be swung to cut at any angle from vertical to 45° right or 45° left.

MARVEL *Metal Cutting* **SAWS**

Better Machines—Better Blades

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ARMSTRONG-BLUM MANUFACTURING CO.

5700 Bloomingdale Avenue *"The Hack Saw People"* **Chicago 39, U. S. A.**

"Uneven" Sheets Cause of Press Plant Trouble, *Says Trade Paper**

*Name and issue on request

"There are reports that uneven sheets are causing no little trouble with dies in automotive press plants. They are using sheets that, while perfectly sound for use, are not of the quality usually demanded for high production dies."

This bears out what we have been saying that "unevenness," or "variation trouble" as we call it—is the real villain in stamping and roll-forming plants . . . Actually, most steel produced today is remarkably uniform within the standard practice tolerances for each product. The biggest bugbear is not "unevenness" but *misapplication*, coupled with possible variables in tools and dies, in machine set-ups, even in lubricants . . . So you can see what a challenge this must be to a sheet and strip warehouse. We *don't make* the steel. We *pick* it! Yet, for all practical purposes, our steel must work as well as what you might otherwise order direct-from-mill.

Dependable Dan says, "Here's how it's done—

"We at Reliance do it by ***job-fitting.*** *That means combining all we can learn about your particular job with our 'feel for steel'—then applying in-stock material to give you what you need in dimension, temper and finish. That is just as true for Hot Rolled and Cold Rolled Sheets as for DSC Cold Rolled Steel Strip."*

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Coils . . . Cut Lengths . . . All Tempers

SHEETS

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Standard and Production Sizes or Cut to Actual Working Dimensions

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Mr. Wilson's Opportunity

It is estimated that purchases by the United States government in 1952 totaled $54.2 billion, of which $48.9 billion was for national defense. Government purchases accounted for about 15 per cent of the total gross national product of $345.1 billion.

These figures emphasize the importance of Uncle Sam as a customer of private industry. It is likely that he will continue to be a big customer for several years. In view of this great volume of business, one wonders whether the relations between officials representing the government as buyer and executives representing industrial companies as sellers are as good as they could be.

There is considerable evidence to indicate that these relations can be improved. In truth, it is probably no exaggeration to say that if a hundred typical industrial companies, in any period except one of all out war or other extreme emergency, had the choice of accepting a contract with the federal government or one of equal value with a private company, 90 or more of the 100 would choose the latter.

Some of the reasons for this preference are real and some are fancied. Practically every person who has dealt with the government believes that a terrific amount of unnecessary red tape is involved. Many think that certain specifications are too exacting for the purpose for which a part is designed. Others think that contracts and specifications are unnecessarily complicated. "Too much paperwork" is another common complaint. There is also widespread criticism of bidding practices, inspection techniques, the unfairness of renegotiation under certain conditions, and failure of government people to understand industry's problems.

It is almost certain that a painstaking study of these and other complaints by somebody who has access to authoritative information on both sides of the argument would lead quickly to improved relations between buyer and seller. It happens that the new secretary of defense comes from a company that has had more experience in dealing with the government than any other company. If Secretary Wilson were to tackle this problem vigorously, he could make government contracting more attractive and could save millions for the taxpayers.

E. C. Shaner

EDITOR IN CHIEF

MILLIONS ARE WASTED: While its new broom still is sweeping clean, the Eisenhower administration might well apply certain simple tests to all government activities. One test would be: "Is this activity really necessary?" Another way to put the question would be: "Is this activity or service something that was demanded by a substantial number of citi-

zens or by a serious problem that called for solution or is it something dreamed up by public servants desirous of perpetuating their jobs?"

Truthful answers to these questions undoubtedly would reveal scores if not hundreds of chores being performed by the federal government that are not wanted or needed by the people. For instance, many departments and agencies publish numerous books and pamphlets on subjects of limited interest or on subjects adequately covered by books and periodicals issued by private publishers. Much advice is offered by government agencies which is not solicited.

A riddance of these unneeded and unwanted services would save millions of dollars.

HOPE FOR TAX REFORM: Although former President Truman seldom gave any attention to the need of lowering taxes, strong pressure was building up in the 82nd Congress for a more realistic tax structure. This is revealed in the final report of the old House Committee on Small Business (p. 50), which finds that present high taxes on individuals reduce investment in business enterprises, that high taxes on corporations absorb profits that should be plowed back into business and that current depreciation policies are oppressive to new businesses.

This critical attitude on the part of a Democratic-dominated committee of the old Congress indicates that the efforts of the Republican 83rd Congress to rewrite the federal tax code on more constructive lines undoubtedly will be given strong support by many Democrats. With Congress and the executive branch both pulling in the same direction, there is more hope for tax reform than at any time in decades.

BUYING MORE SELECTIVE: Outlook for 1953 for industrial supply companies — previously known as mill supply houses — is encouraging, even though one senses an overtone of caution. These suppliers expect a slight rise in the dollar value of their business in the current year over that of 1952. The physical volume of business (p. 43) will remain at about 1951's level.

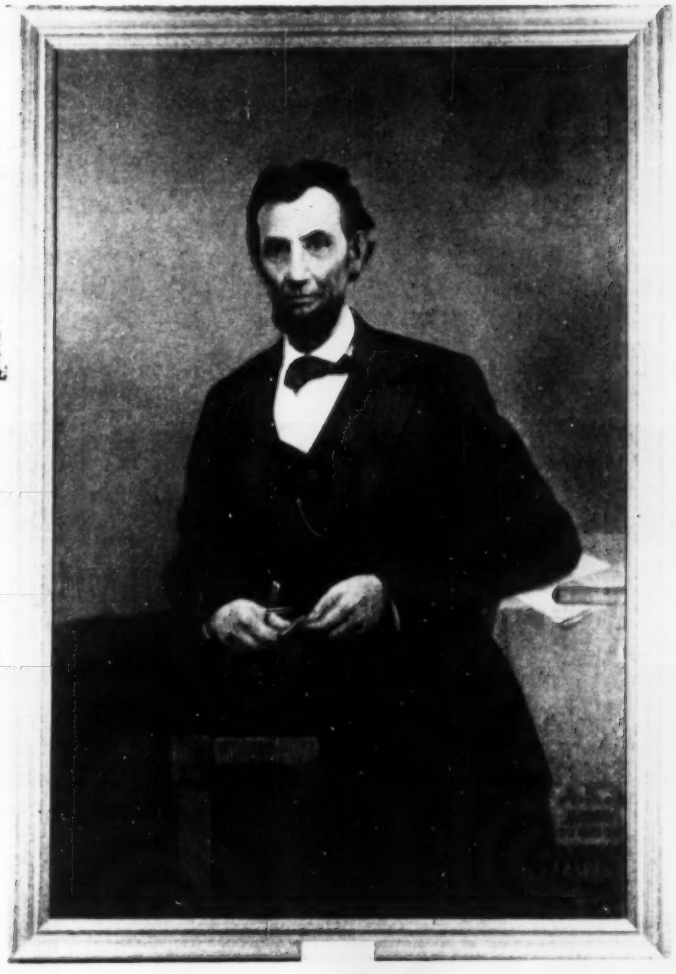
In view of the manner in which the industrial supply services penetrate deeply into almost all activities of the metalworking industry, this forecast can be construed as sort of a barometer of economic conditions in metalworking. Some items remain in tight supply, but in general inventories are larger and in better balance than for a long time. Already customers are indulging in the greater opportunity to "shop around" and to show more interest in prices.

DEGREE OF SATURATION: Sometimes rather sudden changes in the buying habits of the public are confusing. According to the American Home Laundry Manufacturers' Association (p. 63), factory sales of automatic tumbler dryers in 1952 increased 26 per cent to 614,677 units. In the same year, sales of standard-size household clothes washers declined 6 per cent to 3,301,123 and sales of ironers dropped 27 per cent to 202,143 units. Why this marked difference in preference for these items?

One answer is that the dryers are a newer development than washers or ironers. Another is that mothers with young children recognize immediately the convenience of dryers. Probably the best answer of all is that the potential market for dryers is estimated to be only 3.6 per cent saturated, whereas that of washers is satisfied to the extent of 76.2 per cent and that of ironers to 9.2 per cent. The low saturation points in markets for some appliances are significant economic guideposts.

A LIFT FOR PLASTICS: Whether or not plastic materials will replace steel in the bodies of automobiles still is a controversial subject. Almost everybody recognizes the fact that flat-rolled steel has numerous advantages under the mass production techniques employed in motor car manufacture. Nevertheless, the enthusiasts in the field of synthetic materials are not awed by these generally accepted advantages nor are they inhibited by any reverence for tradition. In fact, the current fad for sport cars has given them new encouragement.

Commercial production of low cost automobile bodies is actually under way. Glasspar Co., Costa Mesa, Calif., and the Naugatuck Chemical Division of the United States Rubber Co. (p. 79) are making bodies to be mounted on 100-inch wheelbase frames from a composition of glass fibers and Vibrin polyester plastics. The process is still in the "hand-made" stage, but motordom is watching its progress attentively.



Service to Country– Service to Industry

As we commemorate the birthday of this great American we cannot help but recall an interesting parallel.

In 1833 Abraham Lincoln opened a country store in New Salem, Illinois. In 1842, Joseph Ryerson set up a small river-front iron store in the bustling village of Chicago.

Their beginnings were but a few years apart, and both were inspired by a firm belief in free enterprise and the exercise of personal initiative.

Abraham Lincoln went on to become postmaster of New Salem—lawyer—legislator—President of the United States. Joseph Ryerson's iron store grew to be the world's largest steel service organization.

Both of these pioneers believed in giving service—one, service to his country—the other, service to industry. And how thankful we are that these strong men of the past built the foundations of our free country.

We are grateful, too, for our thousands of customers whose orders, through the years, testify to the Ryerson tradition of trustworthy service.

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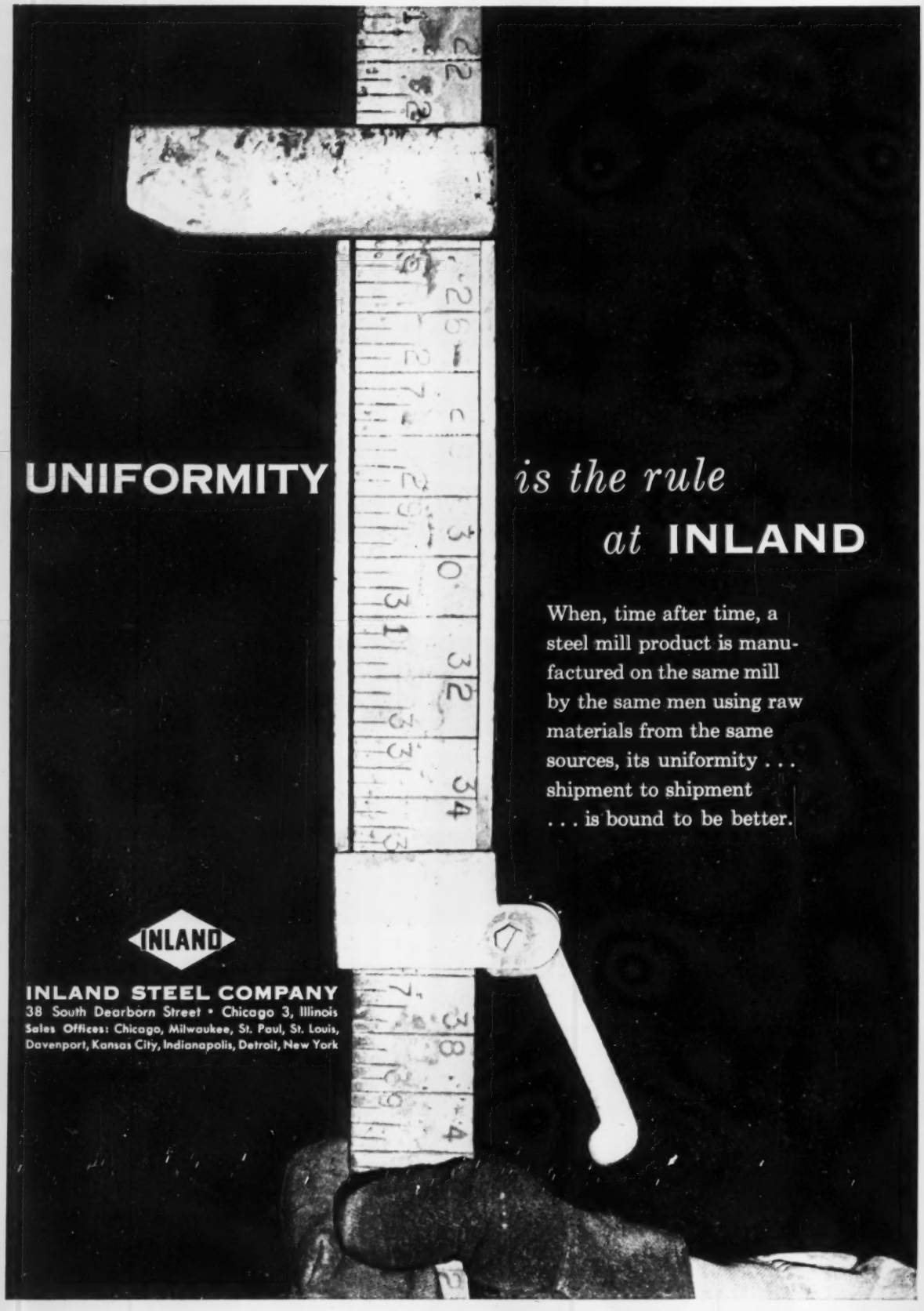
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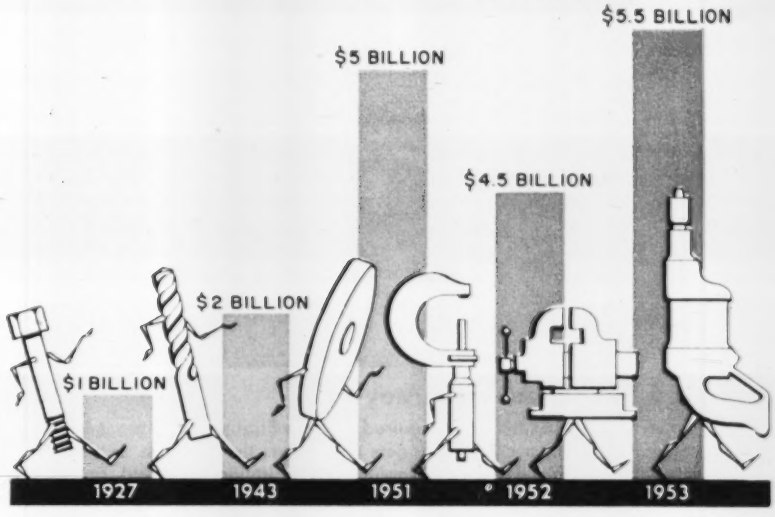


A good indicator for general metalworking volume, industrial supply sales, points toward a sustained high business level in 1953

DESPITE an overtone of caution, one sensitive barometer of metalworking activity—industrial supply sales—indicates a rise in general metalworking's dollar volume this year over last (see the chart). Unit sales will be about equal to 1951's turnover after the inflation has been squeezed out of estimates.

Mill supply houses, or industrial supply firms as they prefer to be called now, can foresee general metalworking activity because they stock the day-to-day operating and maintenance needs of nearly all types of industrial plants. They work with few advanced orders, must rely on sustained industrial activity to have a good year, usually have no peaks or valleys in their sales curve.

Here's how the industrial supply firm situation shapes up in 1953:

Inventories—Stocks are at all-time high levels though still slightly unbalanced. Items depending on steel supplies are generally good or improving. If an item is hard to get, there's some other factor besides steel responsible.

In tightest supply are precision tools such as micrometers, gages, verniers (shortage of skilled tool and die makers to turn out the end-product), larger sizes of screws, bolts and nuts (lack of large diameter rod and wire), high speed steel tools such as hack saw blades and drills using tungsten carbide (lack of tungsten) and diamond grinding wheels.

Industrial supply houses can now get mechanical rubber goods, in about 45 days compared with 120 days formerly; antifriction bearings, smaller fasteners, screws can be moved into stock in 8 to 10 weeks; bolts and nuts in 6 to 8 weeks; and standard cutting tools, in 6 to 7 weeks. Hand tools are in fairly normal supply as are most electric tools. Tubing, both welded and seamless, is improved, and pipe, up to 2-inch diameter, is, too.

One reason inventories are being built up is that customers are shopping around more now. They want to know whether an item is in stock and hesitate to place an order if it isn't. That's led industrial supply houses to step up sales efforts.

Sales—Market analysis and research is on the increase by industrial supply houses. Few new salesmen were added in 1952 when the steel strike hurt the supply business in the third quarter. Now, some new men are being put on, but they're specialists in a certain field like fasteners, abrasives or cutting tools rather than general salesmen. Direct mail advertising, most common among supply houses, is being refined, and lists of prospects, purchased from the outside, are being carefully worked over.

Prices—Quotations, though firm, are questioned more often by customers than was the case over the past two years. Rather than shading prices, industrial supply houses are trying to attract sales by offering the added services of sales engineers, by doing their best to have an adequate stock and by offering a wider range of items.

It's all part of a cautious optimism that sales will be good in 1953 but delivery and prices will again be important factors. And as a business which enters many different sizes and types of industrial plants, it's significant that the barometer of industrial supply sales has gone up a point.

Insulated for 30-mile Journey

When Heppenstall Co., Pittsburgh, acquired its New Brighton, Pa., plant in 1950, a big problem was transporting hot ingots and billets the 30 miles between the two plants. Engineers solved the problem by designing insulated containers like the one above. Made of reinforced asbestos sandwiched in low gage sheet metal, it carries ingots up to 23,000 pounds and loads of billets up to 25,000 pounds 30 miles, losing only 200 F. Limbach Co., Pittsburgh, made the boxes

Steel Production Sets Record in January

PRODUCTION OF STEEL in January, 1953, was 9,888,000 net tons, highest ever attained in a single month.

That's equivalent to an annual rate of nearly 116.4 million net tons, considerably above the highest actual annual production of 105.2 million net tons achieved during 1951.

Enigma Explained—The output in January was more than 81,000 net tons above the production of last October, highest previous month; nearly 200,000 net tons over the revised December, 1952, output of 9,690,162 net tons and 752,000 tons higher than the output in January, 1952. To establish the new record, steelmaking furnaces operated at an average of 99 per cent of their new capacity in January, compared with an average of 99.3 per cent one year earlier, says the American Iron & Steel Institute. Added steelmaking capacity accounts for the higher output with a lower operating rate during January.

Eastern Brass To Convert Steel

Although steel supplies generally are improving, spot shortages still exist and conversion activities still go on.

Eastern Brass & Copper Co., New York, is entering the conversion market with the establishment of a special department for emergency conversion of steel.

Eastern lists these rules for a purchasing agent to follow if he's hunting for steel: 1. Look over inventory records and list metal which can be converted to sizes, gages and tempers you need. 2. Re-examine specifications to shift to more available sizes, gages and tempers. 3. Query purchasing departments of big manufacturers and prime contractors for metals they can no longer use because of specification changes. 4. Check with all mills for metal left by cancellations and end cuts.

	OPEN-HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly production (net tons)	No. of weeks in mos.
1953	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity		
†January	8,837,000	101.3	350,000	88.8	701,000	80.6	9,888,000	99.0	2,232,000	4.43
1952										
1st Qtr.	24,207,329	102.5	1,168,871	87.4	1,821,318	89.0	27,197,518	100.7	2,092,117	13.00
2nd Qtr.	15,839,991	67.0	664,510	49.6	1,330,728	65.0	17,835,229	66.0	1,370,886	13.01
3rd Qtr.	16,986,603	71.2	662,981	49.1	1,538,166	74.4	19,187,750	70.4	1,461,367	13.13
4th Qtr.	25,812,797	108.1	1,027,315	76.0	2,095,766	101.3	28,935,878	106.0	2,202,122	13.14
Total	82,846,720	87.2	3,523,677	65.5	6,785,978	82.4	93,156,375	85.8	1,781,874	52.28

Note—The percentages of capacity in 1953 are calculated on weekly capacities of 1,969,275 net tons open hearth, 88,934 net tons bessemer and 196,250 net tons electric ingots and steel for castings, total 2,254,459 net tons; based on annual capacities as of Jan. 1, 1953 as follows: Open-hearth 102,677,980 net tons, bessemer 4,637,000 net tons, electric 10,232,490 net tons, total 117,547,470 net tons. The percentages of capacity operated in 1952 are calculated on weekly capacities of 1,816,637 net tons open-hearth, 102,926 net tons bessemer and 157,477 net tons electric ingots and steel for castings; total 2,077,040 net tons; based on annual capacities as of Jan. 1, 1952, as follows: Open-hearth 94,973,780 net tons; bessemer 5,381,000 net tons; electric 8,232,890 net tons; total 108,587,670 net tons.

† Preliminary figures, subject to revision

Pattern for Decontrol

Price curbs will go first, then material lids. Markets are not unduly disrupted at prospects

LAST WEEK the first certain steps were taken toward freeing metalworking from price and material controls.

The Reaction—The prospect of price and distribution decontrol has thus far not had great influence on the metalworking markets. Scattered evidence of forward pricing is coming to light, but the practice is not widespread.

When distribution regulations are lifted on steel, copper and aluminum, sellers expect a spurt in demand on a few products, but they don't think the surge will occur in many items and they don't think it will last too long.

In the Works—The current plan is to keep intact all steel, copper and aluminum allotments for the second quarter. If materials are left over in quantities now expected, there will be open-ending of products on an individual basis. No definite word on that is in the cards before Mar. 15. In the next two weeks will come NPA meetings with steel, copper and aluminum producers to study the controls situation.

On Feb. 13 OPS decontrolled many metalworking items, including: Rubber products, all scrap and secondary metals, castings and forgings, lead, zinc, tin, antimony, magnesium, industrial diamonds and many other minor metals and minerals, iron ore, collapsible tubes and closures.

Spotlight on Labor

The end of wage controls will mean little in labor negotiations for 1953. Industry will resist high wage demands, but give more fringe benefits

THE LABOR drama won't be changed much even though some of the dialogue is modified by the end of wage controls.

What little effect wage regulations ever did have on the acting ended last Dec. 6 when the curbs really died with the resignation of the industry members from the wage board. The Feb. 6 action formally dropping the controls was little more than a belated death notice.

The Results—The most sensational immediate result of the end of the regulations was that it permitted to go into effect wage and salary increases in about 7000 cases pending before the wage and salary boards.

Both AFL and CIO leaders say the demise of controls will mean many contract reopenings. There would have been many anyhow. CIO President Walter Reuther is finagling automotive reopenings on the grounds of the new BLS price index (see p. 57 for more details).

Synopsis—The plot in the labor drama—controls or no controls—will unfold like this for 1953: No pattern-setting wage settlement will take place this year. Unions will ask for a lot, but get it in only scattered cases. High wage increases will be fought tooth and nail this year. The significant settlements will involve other issues—the annual improvement factor, more social benefits.

No long, but many short strikes will characterize this year. Unions don't want to stir up too much commotion. If they do, Congress might retaliate with tougher labor laws.

The Role of Taft—As they stand now, most of Senator Taft's proposed amendments to the Taft-Hartley Act are mild.

What's really bringing labor leaders sleepless nights is HR 2545, a proposal introduced by Rep. W. H. Lucas (Dem., Tex.) banning nationwide labor bargaining. Hearings on that and other measures were begun Feb. 10 and produced major fireworks. But odds are against that proposal getting into the labor drama's script this year.

NLRB Rules on Elections

The National Labor Relations Board ruled unanimously that competing unions cannot force representation elections in plants covered by five-year contracts during the full terms of the agreement. This ruling extended the board's previous stand on three-year union contracts.

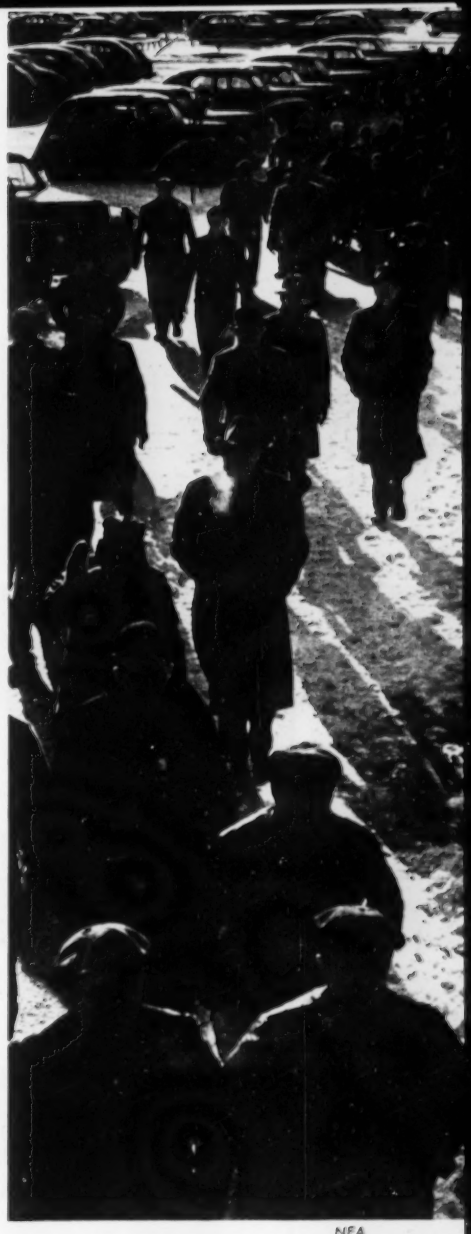
The basis for the ruling, the board said, should be "whether substantial part of the industry is covered by contracts of a similar term." This reverses its earlier actions, which were based on proof that such contracts were the "custom of the industry." Nine major auto producers and four of the five major farm equipment manufacturers are covered by the five-year contract.

NAM Opposes Productivity Tie

Over-all productivity has increased substantially in the last 50 years, but not enough is known about year-to-year fluctuations to tie it with wages and efficiency, says the National Association of Manufacturers.

The association made a broad survey of available facts on productivity and found that so many factors entered the picture that it would be impractical to tie output per man-hour to wages. Instead, the association believes the best way to spread the benefits of increased output among all segments of the population is lower prices.

Some unions have sought to have such a tie-in as part of the national wage policy. But the association claims the statistical tools for carrying it out are unsatisfactory, and there is not likely to be any improvement. In addition, there are too many standards in existence.



NEA

Study Attitudes of Radicals

The Timken Roller Bearing Co., Canton, O., has completed a study of CIO and Communistic attitudes toward free enterprise. A research staff completed the 3130-page report after 11 months of investigation.

Opinions of Communists and CIO leaders are similar in many cases, the report concludes.

Researchers examined official publications and periodicals of both organizations, testimony before Congress, newspapers, magazines and other sources. Copies of the survey may be obtained at cost from John Yezbak & Co., 3211 Prospect Ave., Cleveland 15, O.

Road Building Shows Big Appetite for Steel

NEA

Large highway programs ahead mean that road building will continue to take big portions of the country's steel product output

ROAD BUILDERS long ago discarded the pick and shovel for power-driven construction machinery. Now, machines must not only dig a ditch faster, but dig a deeper ditch and a better ditch to build modern highways at lower cost per mile.

That was one theme stressed at the 51st annual convention of the American Road Builders' Association in Boston, Feb. 9-11.

Appetite for Steel—In addition to contributing heavily to improved road construction machinery by supplying improved materials for their design, the steel industry is being called upon to furnish better products and materials which go directly into highway building. The latter consumes 71 per cent of the sheet metal pipe output, 6 per cent of the structurals and plates and 5 per cent of the reinforcing bars produced. Current highway programs, including 664,000 miles of federal aid highway system requiring expenditures of about $32 billion, carry nearly 10 per cent of their value in steel products.

In addition to new construction, there are thousands of steel highway bridges having old wooden floors which need replacement. C. R. Clauer, chief engineer, United Steel Fabricators Inc., Wooster, O., told the road builders' meeting. Mr. Clauer described a new structural plate bridge flooring which is designed for modern materials and mass production techniques to meet such needs.

Standard Trend — Standardization in steel highway products is one of the major objectives of both suppliers and builders. Anchor rods to any highway guard rail specification can now be supplied from stock of three anchor rods where not too long ago more than 19 different anchor rods were needed, says J. E. McCracken, sales engineer, Bethlehem Steel Co., Bethlehem, Pa. Similar standardizing has been done on guard cable, dowel bars, signs and markers and other products.

Large highway programs ahead seem to assure that road building will continue to take the large ratios of steel products mentioned above. Reduction in federal construction expenditures will not mean curtailment of federal aid to highways as now authorized by Congress. Even then, present rate of highway construction is less than half that necessary to correct existing deficiencies within a practical period, according to George H. Fallon (Dem., Md.) of the House subcommittee on roads.

Metal Powder Heads South

Powdercraft Corp., a newly organized company, is building at Spartanburg, S. C., what it says is the first metal powder fabricating plant in the South. Scheduled to begin production by second quarter, the company will make sintered bearings, structural parts and experimental textile industry parts.

Officials of the new firm are veterans in metal powder manufacture. President is T. L. Robinson, chairman of the Metal Powder Association and former president of Wel-Met Co., Kent, O., which was bought last year by Ferro Corp., Cleveland. Several of Mr. Robinson's former associates at Wel-Met join him in the new venture.

Tin Cans To Salvage Copper

A plant designed to process scrap tin cans for use in recovery of copper from mine waste sludge in Arizona, Utah and Montana is nearing completion in Houston.

Built for the City Junk & Supply Co., the plant will clean the cans down to the basic iron and shred them. The processed cans will be shipped to the mines and placed in vats so that sludge can be poured over them. The action between the iron in the cans and the copper sulphate in the sludge will precipitate copper.

NPA officals believe the process will permit recovery of waste copper amounting to 10 per cent of the domestic supply.

Oil Tool Industry Expands

Firms engaged in production of oil tools and specialty items in the Houston area are in the midst of a $25 million expansion program in an attempt to meet the growing need for petroleum products.

Oil well drilling is expected to reach record proportions in 1953, says the *Houston Chronicle*, and wells will be drilled deeper.

Among the expansions noted was a $13 million project for Cameron Iron Works, which is producing ordnance items as well as oil tools. Hughes Tool Co. announced it will

increase its capacity by 40 per cent. When completed, the expansions will raise capital investment in the industry in Houston to over $75 million.

Magnethermic Gets Contract

Magnethermic Corp., Youngstown manufacturer of electric induction heaters, obtained a $1-million contract to make low frequency induction heaters for six of the Air Force's big aluminum extrusion presses. To handle the work, the company is putting in a $50,000 expansion program. The units, which will melt aluminum billets for presses ranging from 8000 tons to 20,000 tons, have been in the development stage for over a year. They will take billets 32 inches in diameter and 80 inches long.

Kropp Forges Titanium Parts

Kropp Forge Co., Chicago, says it is launching a program to manufacture titanium parts for Army Ordnance. Seven different heavy forgings are involved in the program. To facilitate production, the company's main plant in Chicago is equipped with a 40,000-pound drop forge hammer, a 4000-ton forging press, additional furnaces for heating metals to forging temperature, more die sinking facilities and handling apparatus.

The company also produces aircraft parts of titanium, including landing gear forgings, structural members and jet engine parts.

PAD Sets Priorities Assistance

Priorities assistance for the purchase of 289,026 tons of line pipe has been authorized so far for the second quarter by Petroleum Administration for Defense. Twelve large crude oil pipelines and 11 large petroleum products lines with construction costing over $492 million account for 251,306 tons of the pipe, and a number of smaller projects take up the remaining 37,720 tons.

Of the large projects, one crude line and five products lines received priorities assistance for the first time. Most of the construction is scheduled for completion by fourth quarter, 1953.

A Young, New Industry Turns Out . . .

PLASTIC PIPE

NEW USES and developments in plastic pipe are expanding a young industry. Manufacturers anticipate gains in 1953 ranging from 25 per cent to 100 per cent over 1952 production.

Still somewhat of an enigma to the public, due to the industry's short history, plastic pipe falls into two general categories: Flexible and rigid types. Both are extrusions of thermo-plastic materials, available in standard pipe sizes. Polyethylene is a principal material in flexible pipe, and its comparative shortage is hampering manufacturers. Some plastic pipe is reinforced with glass fiber, while pipe made from styrene combined with other materials such as synthetic rubber can be used for carrying corrosive liquids.

History—Although available in quantity for only about three years, plastic pipe appeared during the early years of World War II. Early types were rigid and served as a substitute for steel. Considerable research and development led to expanded production beginning in 1949. A spokesman of the Society of Plastics Industry says 1950 output was about 5.2 million pounds, mounting to an estimated 15 million pounds in 1952 and continuing its rise at the same rate in 1953.

Some 60 companies produce various kinds of plastic pipe. Some five or six can be classed as major producers while a growing number of small companies are entering the industry.

Sizes—The most common sizes of plastic pipe are from one-half inch to six inches inside diameter, with the smaller sizes leading in popularity. Experimentally, the industry has produced pipe up to 16 inches. The pipe is sold through area distributors in hardware and implement stores.

An early use for plastic pipe was in mine installations, where the plastic successfully resisted underground chemicals. Major users

Plastic pipe is installed underground by Carlon Products Corp., Cleveland

now include the petroleum industry, farmers, gas and cold water supply systems and well-drillers.

Advantages—Spokesmen of Carlon Products Corp., Cleveland, credit light weight and ease of installation, as well as corrosion-resistance, for increases in sales. Plastic pipe sections can be joined easily and resistance to rot, rust and soil acids make it long-lasting. Manufacturers say little adhesion between liquids and the pipe interior is encountered, causing no adhesive grip to the liquid's forward motion.

Problems faced by manufacturers include overcoming buyer resistance to an unfamiliar material. Plastic has certain drawbacks, such as weakening in high temperature ranges, but manufacturers hope to solve many of their problems as their industry reaches maturity.

Grinnell Gets Big AEC Contract

Grinnell Corp., Providence, R. I., received a $230-million contract from the Atomic Energy Commission to fabricate and install thousands of tons of seamless, stainless and miscellaneous pipe in the new AEC plant near Portsmouth, O. The pipe will be fabricated in a plant yet to be built in the vicinity of the atomic energy plant.

Authenticated

Another Bonanza at Beech Aircraft Corp.

For the second time since the start of Korean hostilities, Beech Aircraft Corp., Wichita, Kans., announced a new model of its famous Bonanza. Dubbed Model D35, it is already in production at the rate of one a day, and 25 planes have been delivered to 22 states and Switzerland. Beechcraft made 3400 Bonanzas prior to this model. Beech has a $210-million backlog of defense contracts.

Ammunition Production: Higher Target

THE AMMUNITION industry may continue to raise its capacity when most other defense producers have leveled out their expenditures on new plant and equipment.

The Army says that more than 52-million rounds of artillery ammunition and 3-billion rounds for small arms were produced by private industry and Army Ordnance manufacturing plants in 1952. Since Korea, the rise in output of artillery ammo has been particularly spectacular. The U. S. in the six months immediately following the war's start produced 1-million rounds for artillery pieces. More than 30-million artillery rounds were manufactured in the second half of 1952.

Ammo-War—Last year's mighty output valued at more than $2 billion doesn't necessarily indicate that the ammo industry will end its expansion program soon. The Korean war, more than any past conflict, is an ammo-war. U.N. and Communist forces are both well intrenched. Sending up a pounding artillery barrage is the most frequently used method to weaken the enemy's front-line position. Rate-of-fire of the most important guns are several times the authorized rate per-gun per-day in World War II. Large ammunition supplies, therefore, are needed.

Caught Short—Supplies of ammunition are far under the desired level, according to many Army officials. The U.S. in 1950 was caught short on production facilities for ammunition. Machine tools were particularly hard to obtain. The ammo situation would have been quite serious if it weren't for large stocks left over from World War II. Present multiplication of the 1950 output may not be as encouraging as figures suggest.

So manufacturers of many types of ammunition may have a long way to go before production and government stockpiles are both at desired levels. Any stretch-out in ammunition orders during the coming months is improbable.

Industry Buys More Aircraft

Production of light aircraft in 1953 is expected to continue rising as industry and agriculture boost their orders for utility aircraft. So says Joseph T. Geuting Jr., manager of the Utility Airplane Council of Aircraft Industries Association.

Deliveries of utility planes in 1952 halted a six-year downtrend by jumping 32.8 per cent over the previous year to 3058 light planes. Large backlogs on planemakers' books and production gains made last year indicate that volume may climb even further during 1953.

Significantly, over 82 per cent of the light planes produced in 1952 were four-place or larger types, says Mr. Geuting. In 1946, only 10 per cent of the light planes produced were four-place or larger.

DTA Reports Tank Car Output

Defense Transportation Administration says that 6371 railroad tank cars were completed and put in service during 1952. This 6371-unit total includes tank cars built for domestic service, export and the Defense department. Order backlogs on Jan. 1, 1953, totalled 4658 railroad tank cars.

De Laval Expects Good Year

De Laval Steam Turbine Co., Trenton, N. J., reports that business in 1952 was better than 1951, and from all indications, it will be even better in 1953. Recent orders for propulsion units, turbo-generators and centrifugal and rotary pumps for marine installations and an existing backlog of orders give such assurance.

Alcoa To Cast Ingots in Texas

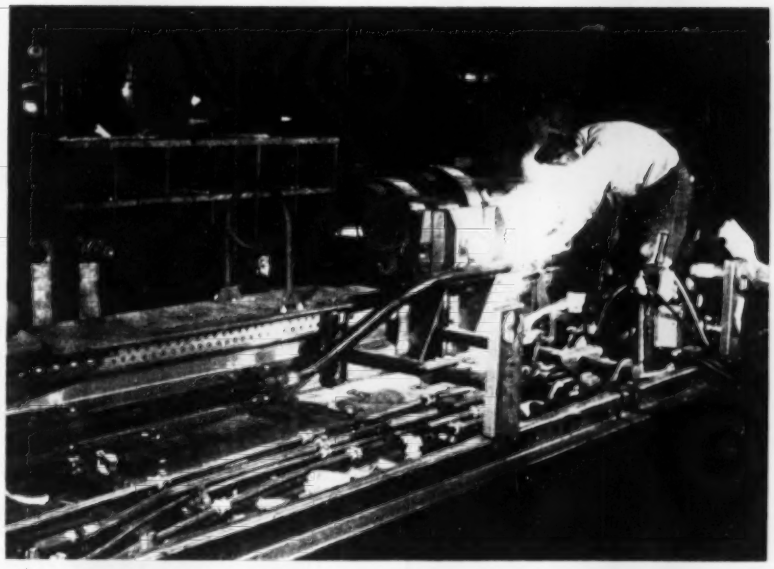
Aluminum Co. of America will convert the output of its Port Lavaca, Tex., plant from pigs to ingots in April as the result of a $22-million expansion begun last year.

By shipping ready-alloyed aluminum to Alcoa's fabricating plants in Edgewater, N. J., and Davenport, Iowa, and to independent users, the company expects to save time and money.

By the end of the year, 90 per cent of the Port Lavaca production will be cast in ingots. The changeover will raise the plant's production from 100 million pounds to 170 million pounds a year.

SELECTED DEFENSE CONTRACTS IN EXCESS OF $100,000

PRODUCT	CONTRACTOR
Cartridges, Carbine	Remington Arms Co. Inc., Bridgeport, Conn
Primers, Percussion	Eagle Lock Co., Terryville, Conn.
Motor Vehicle Parts	W. D. Bright Enterprises, Waltham, Mass
Aircraft Propellers	Curtiss-Wright Corp., New York
Fire Control Systems	Magnavox Co., Ft. Wayne, Ind.
Radio Receivers	Motorola Inc., Chicago
Receiver-Transmitters	Collins Radio Co., Cedar Rapids, Mich.
Amplifiers	Bendix Aviation Corp., Detroit
Heaters, Kerosene	Florence Stove Co., Gardner, Mass.
Parts for Diesel Engines	General Motors Corp., Detroit
Parts for Sound Projectors	Ampro Corp., Chicago
Operating Tables, Pedestal	American Sterilizer Co., Erie, Pa.



Touching the Torch to a Steam Line

This worker is welding lengths of 2½-inch wrought iron pipe used for the steam line on one of the new railroad cars being manufactured by the Budd Co., Philadelphia, for the Chicago, Burlington & Quincy Railroad. A. M. Byers Co., Pittsburgh, made the noncorrosive pipe for air brake systems as well as steam lines

Services OK Stockpiling

But they are lukewarm toward standby plants and too much centralized authority

GENERAL AGREEMENT exists between the Vance committee report on machine tools stockpiling and the armed services thinking, but a lukewarm attitude prevails on some of the particulars.

Recommendations of the committee follow closely the practice followed by the services between World War II and the Korean outbreak, machine tool experts in the Navy department think. In June, 1950, the Navy had 40,000 pieces of equipment, and it acquired over 20,000 more by Oct. 1, 1952. About 39,000 have been withdrawn for use by the armed services or because they were obsolete, leaving 21,000 in the Navy's inventory. Present thinking calls for further stockpiling of machine tools essential for defense production with provisions to dispose of reserve tools as they become obsolete.

Mild Approval—Naval authorities back only mildly the plan to erect shadow plants, and then only as an alternative to stockpiling. Standby plants do not solve the problem of finding highly skilled manpower in a hurry to operate them in times of emergency.

The military, generally speaking, agrees with the report's recommendation that appropriate measures are essential to provide more effective co-ordination and to minimize the deficiencies and imbalance among service programs. But such co-ordination should not extend to having a single, centralized office to determine what tools are to be stockpiled and what tools are to be doled out to the services in an emergency.

Strive for Balance—Agreement is found also on the thought that the services should strive to balance the various defense programs. At present, some are well advanced because of the needs of the Korean war. Others lag because of no immediate necessity.

U.S. Will Buy Machine Tools

A wave of machine tool buying by the armed services is in the making. The Navy already has started negotiations, and the Army and Air Force are preparing to follow suit. While the exact number of tools is not known, it will be "many hundreds." Included will be large numbers of the big tools. Their acquisition will fill some of the gap in the machine tool mobilization base and to some extent will reduce the need for erection of standby plants. The buying, of course, comes at a time when many machine tool manufacturers are in need of business to keep their organization going. In another move to stimulate sales of new machine tools, the NPA will announce a policy under which machine tools and other production equipment in the armed services' central inventory will no longer be leased for use by defense supporting industries, unless those industries are unable to get reasonably prompt delivery from the builders. Instead of leasing, users will have to buy.

CHECKLIST ON CONTROLS

Materials Orders

ELECTRIC UTILITIES—Direction 4 to NPA Order M-50, issued and effective Feb. 6, 1953, requires that electric utilities use the program identification E-5 instead of H-3 in placing authorized controlled material orders and rated orders for materials and products other than controlled materials for major plant additions when authorized by Defense Electric Power Administration.

TIN—Revocation on Feb. 6, 1953, of NPA Orders M-8, M-24, M-25, M-26 and M-27 removes all controls over uses and inventories of tin. The only requirement remaining is that monthly reports on Form NPAF-7 be submitted by consumers and dealers on tin stocks, receipts, shipments and consumption.

NPA Regulation

INVENTORY—Amendment 1 of NPA Inventory Regulation 1, issued and effective Feb. 10, 1953, removes inventory controls from tin products.

Price Regulations

STEEL WOOL—Amendment 34 of General Overriding Regulation 9, issued and effective Feb. 4, 1953, exempts from price control sales of industrial steel wool.

BOLTS, NUTS, SCREWS, RIVETS—Amendment 1 of Supplementary Regulation 1 of CPR 118, issued and effective Feb. 6, 1953, makes certain changes in the basis on which some manufacturers of bolts, nuts, screws and rivets may apply for increase in their ceiling prices.

COPPER WIRE MILL PRODUCTS—Amendment 4 of CPR 110, issued Feb. 5, 1953, and effective Feb. 10, establishes dollars and cents ceiling prices for certain copper wire mill products and for certain reel sizes and constructions.

STEEL CASTINGS—Amendment 1 of Supplementary Regulation 4 of CPR 60, effective Feb. 12, 1953, clarifies the basis of applying the 3½ per cent increase authorized on Jan. 23 for high alloy steel castings.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Congress has a blueprint for rewriting the federal tax code. The old House Small Business Committee analyzed harsh economic effects of the present policy

A COMPLETE rewriting of the federal tax code and regulations is actively on the agenda of the 83rd Congress. The Treasury department and the Congressional Joint Committee on Internal Revenue Taxation could do a lot worse than adopt as a pattern the final report of the old House Committee on Small Business.

This report, representing unanimous views of Democrats and Republicans on the committee while it still was headed by a Democrat, Rep. Wright Patman of Texas, appears to be the most penetrating analysis of economic effects of the existing tax system that has been made public by a unit of the government.

Investment Is Cut—The report finds that the present high taxes on individuals reduce investment in business enterprises. It declares that the high taxes on corporations, particularly the excess profits tax, absorb profits that should be plowed back into business operations.

Further, present normal depreciation policy is especially oppressive to new enterprises, preventing them from recovering investment capital in the early years of their existence.

Identified as House Report No. 2513, 82nd Congress, 2nd Session, the 310-page study supports and echoes the criticisms leveled by businessmen.

More Taxes—Meanwhile tax bills in Congress continue to multiply. Eleven senators have introduced S 256 for a study of overlapping and competitive taxes at the three levels of national, state and local government. Similar bills in the 82nd Congress died in pigeonholes.

New MSA Amendment . . .

Suppliers of goods to be exported under Mutual Security Agency programs should get a copy of Amendment 1 to MSA Regulation 1. It describes the documents which must be furnished to prove shipment has been made, and certain minor changes in other forms and procedures, as the procedure under which claims may be presented. The amendment deletes the unworkable provision under which offshore procurement of petroleum products had to be at prices under our domestic ceilings.

Copies of the amendment may be obtained from the MSA, Washington 25, D. C.

Criticize Senate Ruling . . .

When Robert C. Sprague, Massachusetts manufacturer, refused to sell stock in his family-owned electric company in order to become undersecretary of the Air Force, it illustrated a problem defense agencies are facing.

Army and Air Force authorities say that the Senate's insistence that Defense department appointees divest themselves of stocks in companies doing business with the department is making it difficult for them to complete their staffs. One complainant says he has been "seriously handicapped."

Mr. Sprague was president and director of Sprague Electric Co., North Adams, Mass. He had severed connections as president, but was unwilling to sell his stock.

To Change Import Laws . . .

HR 1-2072, introduced as a direct consequence of the recent flooding of the U. S. market by certain goods manufactured in Czechoslovakia, is intended to prevent similar inundations.

The existing Foreign Trade Zones Act gives importers 30 days, while their goods are in foreign trade zones, to declare them, and during that period the goods are protected against increases in tariff rates.

The new bill would allow the old rates to be applied only to goods on hand in the zones on the day rate increases are affected.

LAWMAKERS TAKE TO TV
. . . cameras corral congressmen

TV Lures Senators . . .

"In the old days," aptly remarks Ned Brooks of National Broadcasting Co.'s Three-Star Extra newscasting program, "when a reporter called up a senator, he would usually be told by an assistant: 'Sorry, he's tied up in a committee meeting.' These days they tell you: 'Sorry, he's on the Kate Smith show today.'"

Upholds Private Power . . .

Partial reversal of the trend toward public power may result from the appointment of former Rep. Fred Aandahl (Rep., N. D.) as head of the Bureau of Reclamation. "Over-expansion of public power and distribution," he told the Senate Interior Committee, "is pointing in the direction of nationalization of power."

He expressed opposition to building steam plants to supplement public power production and thought public transmission lines "should not extend too far just to reach priority customers." Complete reversal of the trend, said Mr. Aandahl, is impossible because in "some areas" the development of public power has gone so far that "we can't backtrack."

■ Composite photo showing a drum of chemicals being put through a variety of handling motions by the Baker "Octopus."

THE BAKER RAULANG CO 1853 1953 THE BAKER-RAULANG CO.

This BAKER TRUCK handles any shape load ...

and stacks it in any position!

■ You name the load—the Baker "Octopus" illustrated will handle it, whether it's a drum, a roll of newsprint, a packing case, a piece of machinery, a bale of cotton or a pallet load of cartons. Moreover, it will pick it up, transport it, raise or lower it, shift it to left or right, revolve it, up-end it, or stack it in any position. In fact, it will handle it with no more physical effort than is needed to operate the simple hydraulic controls.

The "Octopus" consists of a standard Baker Fork Truck equipped with a variety of Baker attachments—360° revolving head, 4-purpose carriage, up-ender, drum clamp, etc.—which may be applied individually or in combinations. While one truck may never be called on to perform all these functions, the "Octopus" demonstrates the range of utility of Baker fork trucks and attachments.

write for *6-page special report on the application of Baker attachments to various loads.*

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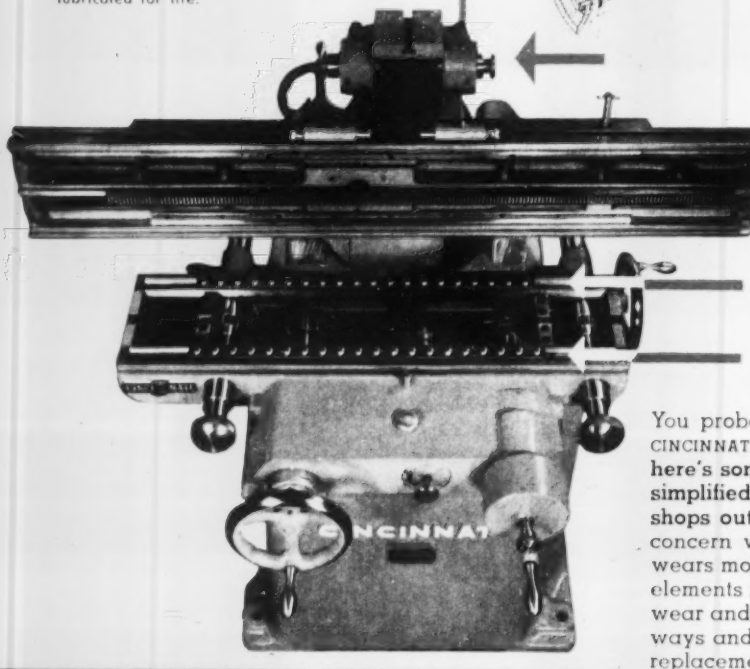
Material Handling and Construction Equipment.

You're looking at Low-Cost maintenance of cutter and tool grinding equipment

A big Cincinnati advantage

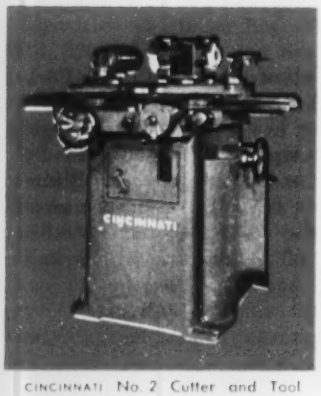
Grinding wheel spindle cartridge, CINCINNATI No. 2 Cutter and Tool Grinder, **can be replaced in an interval of minutes.** Spindle is mounted on anti-friction bearings lubricated for life.

Sectional view of grinding wheel spindle cartridge.

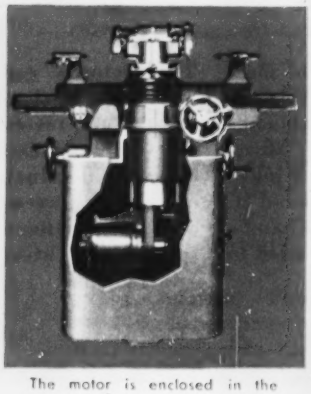


Anti-friction ways, CINCINNATI No. 2 Cutter and Tool Grinder, are hardened and ground, **easily replaceable.**

You probably know all about the versatility of CINCINNATI No. 2 Cutter and Tool Grinders. **But here's something you may not know about—the simplified maintenance features that help many shops out of a tight spot.** Two of these features concern wear. As you know, every mechanism wears more or less in use, but there are only two elements in CINCINNATI No. 2's that may eventually wear and affect performance—anti-friction slideways and wheelhead spindle. Should they need replacement after years of service, **the job can be done by your own men in about two hours' time.** Replacement ways are hardened, ground to "dummy" units in our shop; the wheelhead spindle is completely assembled in a cartridge unit. Anti-friction slideways; enclosed motor with plenty of room for maintenance; dual table controls at front and rear; wide selection of attachments for sharpening all types of cutters including sintered carbide . . . these and other features of low-cost cutter sharpening are fully illustrated in a 44-page catalog. You may obtain a copy by writing to our nearest direct office or agent, or the address below.



CINCINNATI No. 2 Cutter and Tool Grinder. For complete information write for catalog No. M-1734.



The motor is enclosed in the base, yet there is ample room for maintenance.

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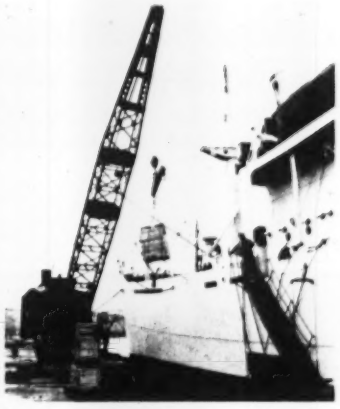
MDAP in the Balance . . .



MAJOR ITEMS SHIPPED

In Number of Items & Rounds of Ammunition

Military Department and Major Item	Cumulative Nov. 30, 1952
ARMY	
Radios & Radar	36,600
Tanks & Combat Vehicles	18,664
Motor Transport Vehicles	98,689
Small Arms & Machine Guns	1,407,213
Artillery	20,095
Ammunition, Small Arms	496,069,000*
Ammunition, Artillery	10,937,000
NAVY	
Aircraft	481
Vessels	441
AIR FORCE	
Aircraft	2,311*

WHERE ITEMS WERE SHIPPED

(Millions of Dollars—Cumulative Nov. 30, 1952)

Recipient Area or Military Department	Value Programmed†	Value Shipped†
RECIPIENT AREA		
Europe	10,515	2,649*
Near East & Africa	1,206	438
Asia & Pacific	1,517	533
Latin America	107	3
MILITARY DEPARTMENT		
Army	7,136	2,399
Navy	2,014	598
Air Force	4,196	625*
Total	$13,346	$3,622*

* Includes adjustment of previously reported data.

† Based on reports from Army, Navy, & Air Force. Includes value of excess stocks, packing, handling and transportation, training and administrative expense.

Congress Weighs Military Assistance

The whole question of buying military end-items here and abroad for the Mutual Defense Assistance Program is being reviewed

U. S. METALWORKING industries have a large stake in this question, now before Congress and the administration: How much military and economic assistance should be given to countries this side of the Iron Curtain in fiscal 1954?

Not only is the total amount of the aid to be determined, but also the portions of the dollar authorizations earmarked for spending at home and abroad. Right now the share of the dollars that is going abroad is increasing and appears due if the French and Germans play ball to increase further.

Protection—But the lion's share of the dollar expenditures will continue to be spent in the United States, with the finished military end-products being shipped abroad. One reason is that we do not wish to locate facilities in areas that might be overrun in the early phases of hostile action.

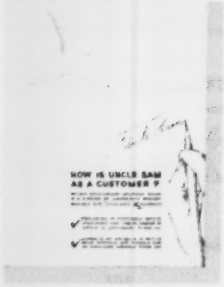
For fiscal 1952, the year in which the policy of military assistance first was applied, Congress authorized $7.3 billion for military and economic aid for our friendly nations abroad. Of this amount, the portion earmarked for military assistance was $5.7 billion. For fiscal 1953, the authorization was cut to $6 billion, with $4.2 billion earmarked for military assistance. For fiscal 1945 the Truman budget request was $7.6 billion; this is the request being studied by the administration and Congress.

Military Shopping List—All of the 1952 and 1953 figures above mentioned were for procurement in the United States except for limited offshore buying. The hard goods bought and manufactured at home and shipped abroad included radios and radar, tanks and combat vehicles, motor transport vehicles, small arms, machines guns and artillery, ammunition for small arms, machine guns and artillery, vessels and aircraft. Also out of these funds the armed services defrayed the cost of training foreign military forces in the use and maintenance of military items.

Offshore buying of military hard goods got off to a slow start running to $729 million in the period Apr. 1 through Oct. 30, 1952. Then an additional $1 billion was assigned out of the fiscal 1953 authorization to offshore purchasing. Of the latter amount about $870 million is unobligated at the moment although this figure is due to be reduced substantially if some contracts now under negotiation by the Air Force at Wiesbaden, the Army at Heidelburg and the Navy at London are signed. There have been hints that the business may not be placed until Secretary of State Dulles and MSA Director Stassen give approval following their recent tour of Europe.

Offshore Divvy — The approximately $893 million so far committed in offshore buying of military end-items breaks down by countries substantially as follows: $350 million to France, $180 million to Italy, $205 million to the United Kingdom, $48 million to Belgium, $41 million to The Netherlands, $34 million to Switzerland, $11 million to Greece, $10 million to Germany, $6 million to Denmark, $6 million to Norway, $2 million to Sweden, $300,000 to Luxembourg, $100,000 to Austria. The breakdown for the procuring agencies: Army $538 million, Navy $245 million and Air Force $110 million.

Of course, it's too early to determine what amount will finally be authorized for military assistance. But, the Eisenhower administration hasn't shown any inclination so far to weaken any of the sinews of war. The outlook is for less drop in military production than was expected two months ago.



Uncle Sam, the Buyer

IS THIS CUSTOMER ALWAYS RIGHT?

By ROBERT M. LOVE
Assistant Editor

HOW SATISFACTORY a customer is the United States government?

A chart on this page shows the importance of that question. U. S. Treasury statements list federal expenditures of $22.2 billion in the calendar year 1950, $40.9 billion in 1951 and $54.2 billion in 1952.

Varied Opinions—A shop owner says, speaking of the government, "You should remember you are not dealing with other businessmen but with a bureaucracy, and all of its members must follow the rules exactly. Too few manufacturers read the rules, fewer still memorize them."

A Pittsburgh manufacturer remarks, "You can't depend on them. They may give you a job today and upset your whole plant. About the time you get going, they change their mind and kick the whole thing out."

More Favorable — A Cleveland executive points out, "We can get along with them when we meet them half-way. Now we invite government representatives over to the plant, explain our operations, and have no trouble at all. Often we invite Army and Air Force men to sit in on our policy-making meetings."

Present plans indicate that in the next two years the national defense program will continue to be a powerful influence in the United States economy.

Defense expenditures may decline in the next two years, but an increase in nondefense spending for highways and other items could fill the gap, still leaving Uncle Sam as one of industry's greatest customers. While federal expenditures are not likely to continue their rapid rise of the last two years, since the defense program, as scheduled, is fairly complete, state and local government purchases should increase more rapidly. They may rise from $23 billion in 1952 to $28 billion in 1955, the Council of Economic Advisers' report suggests.

Complaints Arise — The obvious differences between doing business with private companies and filling contracts with the government has created misunderstandings on both sides. Complaints of manufacturers dealing with the government run through all phases of industrial activity and vary as much as the illustrations cited earlier.

Industrialists often complain that there is too much red tape in bidding for contracts. A Detroit firm, accustomed to handling orders for millions of units, was perplexed to receive a 30-page invitation to bid on an order of 24 screw machine parts. Tired of throwing away such inquiries, they say the government should order items of less than $1000 on simple purchase order and that larger contracts should be simplified.

Red Tape — An Automobile Manufacturers Association survey showed that the automotive industry spends more than 1.5 million man-hours annually filling out forms for the federal government. A solution would be for the government to standardize procurement efforts and simplify its contract language.

Of course no one denies the government its right to complete records. A great increase in numbers of inventory items required by armed services has contributed to the amount of paperwork to be done. In 1941, separate items of Air Force supply numbered 90,000. By 1950 the figure had risen to 407,000, while it is now over 1 million, the Air Force says.

Contract Trouble — Once a contract is secured, troubles begin for many companies. Some contractors can hardly weed through the verbiage surrounding specifications. They protest that the government, having given them a contract, is trying to prevent them from translating it.

To these comments, government

His purchases soar . . .

CALENDAR YEAR	TOTAL GROSS NATIONAL PRODUCT (Billions)	FEDERAL PURCHASES (Billions) FOR ALL PURPOSES	FEDERAL PURCHASES (Billions) FOR NATIONAL DEFENSE
1947	$233.3	$15.8	$12.0
1948	$259.0	$21.0	$15.5
1949	$258.2	$25.4	$18.9
1950	$284.2	$22.2	$18.3
1951	$329.2	$40.9	$36.7
1952	$345.1*	$54.2*	$48.9*

* Estimated

From the Annual Economic Review by the Council of Economic Advisers.

representatives reply that contracts should be understood completely by a company before it enters bids. Too few manufacturers, they add, consult Army and Air Force regional offices to check on specifications before bidding.

An Air Force officer cited the example of a company which learned too late to package a certain product in wood instead of corrugated board. The Air Force refused to accept his product, as it was not delivered according to specification. The manufacturer suffered a loss in this case because he didn't check all specifications.

Value of Specifications—Government men point out that military tolerances must be close because failure of a part can't be allowed in military products and that usage is much more severe than a similar part will have in commercial service. Wording of specifications could be simplified and clarified, however. Some manufacturers, such as foundrymen, will continue to object that tolerances need not be as close as they are.

"They don't understand our problems and they don't follow business practice," a small manufacturer complained. A Detroit executive suggested that the new administration put more skilled personnel into positions of contact with industry. Meanwhile a public relations man in Cleveland listed advantages which his company had secured by inviting government representatives to tour his plant and attend policy discussions.

Inspectors—Government inspectors are inevitable when defense work is being done or government machine tools are being used. Most industrialists get along well with inspectors, but a New Jersey manufacturer claimed that they interfered with his operations by too-frequent inspections.

Renegotiation probably is the least popular aspect of government business. A machine shop owner said, "If a fellow works his head off and makes a good profit, or does the work more economically than others, the government takes away earnings that should be his, and would be in private business. We have no incentive to be efficient."

Need Profits — Small businessmen point out that they need a good profit more than their bigger brothers. They contend that renegotiation limits the amount of government work they are able to do. Civilian jobs remain more attractive because losses on one contract can be covered by good profits on other work.

Frequently companies will voluntarily cut selling prices to the government to avoid making too large a profit. They claim that renegotiation involves a greater expense in record-keeping than it earns in savings to the government and tax-payer.

Excess Profits?—The Renegotiation Act of 1951 set no fixed formmula to recover "excess" profits. It is intended as a broad operation to bring profits into line after contracts have been let. In national emergencies the government must buy hastily and accurate pricing is often impossible. Industry complains, however, that renegotiation is used to cover careless work in routine rather than emergency letting of contracts.

From the government's point of view, renegotiation has been highly successful, having returned $11 billion to the Treasury during World War II. All defense contractors, no matter how small, must file a financial statement with the Renegotiation Board each year a requirement which annoys some manufacturers.

Most government-industry difficulties may well result from contractors entering government work for the first time and not realizing what they are getting into. Government representatives suggest that the best way to break into government work is through subcontracting.

Here the solution is for each party to learn the other's policies and problems. Successful co-operation between the government and many companies willing to meet Uncle Sam half-way testifies to such a possibility.

THE MAJOR GRIPES	POSSIBLE REMEDIES
"Contracts are too hard to get. You enter a bid, then don't hear anything until the work goes to another firm."	*A system should be worked out to publicize better the proposals for and awarding of contracts.*
"There is too much red tape in bidding. We fill out complicated forms for small amounts."	*The government should simplify bids for small items, eliminate duplication of questions.*
"The government insists on specifications which are too tight for our kind of operation."	*Industry must choose its defense work and read requirements more carefully. The U. S. can simplify many specifications.*
"Specifications are too complicated. You have to be a lawyer to understand some of them."	*Some specifications are unduly complex. Clarity in writing contracts will help much.*
"Schedules may be cut off or lengthened without warning. The government changes its mind in mid-stream."	*Some changes are inevitable, but industry should be adequately compensated when they come.*
"Inspectors come in and get in our way. They don't trust us."	*Industry should invite government personnel to tour plants and help them learn industry's problems.*
"Government officials we come into contact with aren't familiar with business practice."	*The government should be sure skilled personnel are in positions of authority.*
"There is no incentive to be efficient or resourceful, as extra profits are taken away."	*A federal study of renegotiation is a must. Industry is not getting a fair shake here.*

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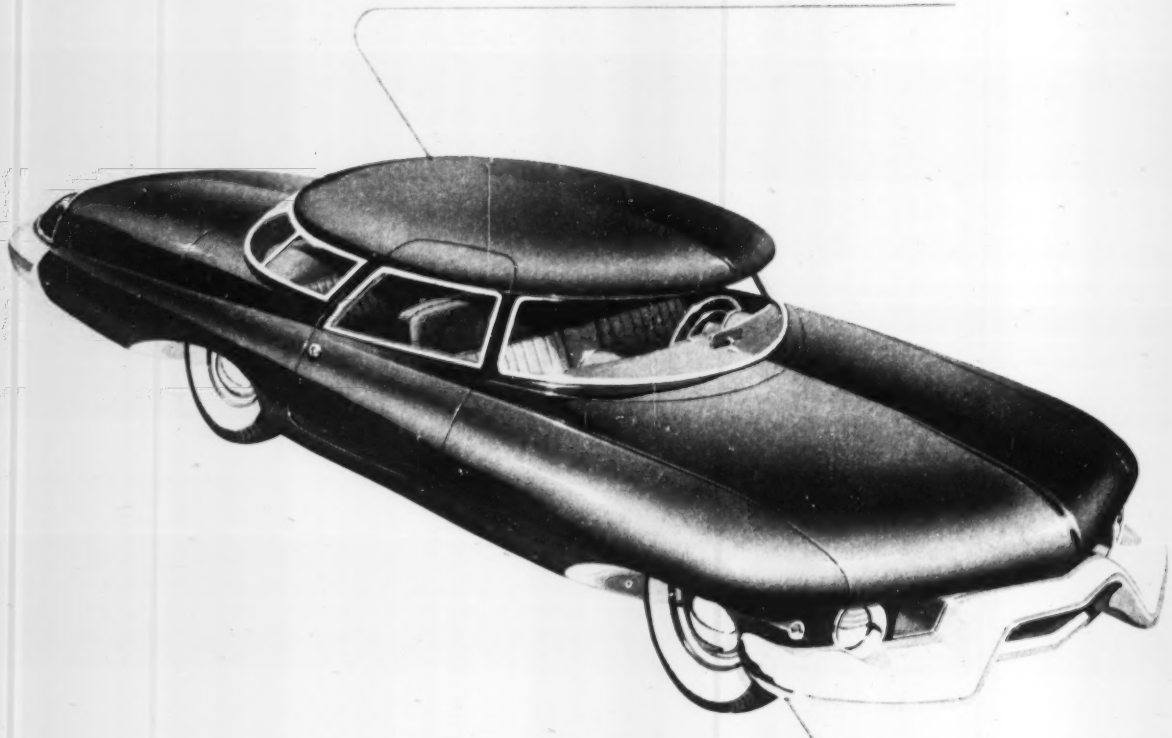

N-A-X HIGH-TENSILE, with its 50 percent greater strength than that of mild carbon steel, means that thinner sections can be used . . . resulting in lighter weight of products. Because it is an alloy steel, it possesses much greater resistance to corrosion with either painted or unpainted surfaces. It has high fatigue and impact values, at normal and sub-temperatures, with the abrasion resistance of a medium high carbon steel . . . resulting in longer life of products.

N-A-X HIGH-TENSILE has outstanding cold-forming properties, and its response to welding, by any method, is excellent. Due to its inherently fine grain and higher hardness, it can be ground and polished to a high degree of lustre at lower cost than possible with mild carbon steel.

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NATIONAL STEEL CORPORATION

By FLOYD G. LAWRENCE *Detroit Editor*

Mirrors of Motordom

The automotive labor pot approaches a boil. Although the old BLS index will be continued for six months, Reuther plans to use the issue as a wedge to reopen contracts

DETROIT

FORERUNNER OF A pitched court battle could be the antics of Walter Reuther in refusing to accept: *a*. The old BLS Index, and *b*. the new BLS Index.

It's clear to even the stewards that Mr. Reuther wants his contracts with the automakers reopened. It's clear, too, that he might use John L. Lewis' tactics to achieve what he wants.

Pro and Con — The propitious moment could be at hand. With new models just introduced and warm weather on its way, automakers are anxious to glut the historically heavy spring auto sales to the full. The vaunted "return to competition" gives added impetus to the automakers' desire to avoid a strike while their iron is hot. On the other hand, labor doesn't want to arouse too much commotion for fear Congress will retaliate.

But removal of the wage ceiling gives Mr. Reuther a glimpse of the wild blue yonder. His contention is that the BLS muddle permits him to cancel the cost-of-living sections otherwise extant in his contracts until 1955. He argues further that the rest of the contracts in question may then be terminated. However, if the auto companies are willing, Mr. Reuther will negotiate a formula for change to the new cost-of-living index instead. His price for this computation will be wage increase and higher pension concessions. *Ipso facto* the contracts will have been reopened.

Tough Situation — That is extremely distasteful to the automakers. But an equally distasteful strike in the auto plants may be forthcoming in the next few weeks if a settlement is not. When and if the strike comes, the automakers will claim a breach of contract and try to force the workers back under Taft - Hartley. Mr. Reuther will claim the contracts were not breached. Then the court fireworks will begin.

New Plymouth Torque Converter

Sluggish getaway is plaguing Plymouth's new torque converter production. Predicted in this column for quantity distribution about Mar. 1, the units, output of which were formally announced last week, will be limited sharply until April or May. Even then Plymouth isn't going to risk getting caught in shifting consumer demand. It'll wait until the dealer orders flow in before rolling up to the ultimate possible, which officials have said will be units for 40 per cent of all its auto production.

Simplicity—The slow start is surprising to many. Basically the unit is a pair of veined rotors. One replaces the flywheel and the other backs against the clutch plate. Behind the cast aluminum rotors and clutch is the normal three-speed transmission, drive shaft, etc. Taking its oil from the engine, the unit adds up to one of the simplest power transmission units in the entire field.

But the torque converter, dubbed "Hy-Drive" by Plymouth sales, was quite an engineering chore, Plymouth men will tell you. The unit adds only 35 pounds to power train weight, but the transmission housing had to be beefed up. The clutch was of necessity made heavier. The crankshaft was lengthened to accommodate the new aluminum rotor unit.

Modifications — Then there was the problem of getting the oil from the engine to the converter housing. The oil relief valve had to be modified and oil galleries redesigned. Then oil lines were added to transport the oil to the housing. The radiator core was increased for better engine cooling. Fins were added to the converter housing for oil cooling. Length of the drive shaft had to be decreased. Road tests disclosed that the device had a propensity to induce stalling in stop-start driving and the carburetor had to be modified accordingly.

But after three years of road testing, Plymouth almost has its new torque converter. When John Q. buys his new Plymouth this summer he'll find the unit available for $38.20 less than Ford's Fordomatic ($181) and $32.55 less than Chevrolet's Powerglide ($178.35).

Operation—Oil capacity of the engine-converter combination will be ten quarts with change and filter replacement recommended every 5000 miles. To operate the unit, the clutch is depressed and the lever moved into high gear. From there on it's strictly accelerator and brake unless you're caught in sand or wish to use second while going down a neighborhood mountain. Of course, to back

Curiosity

Visitors of all ages at the Chrysler Corp.'s touring "New Worlds in Engineering" show find the above model of a Firepower V-8 engine hemispherical combustion chamber fascinating. The model demonstrates how the greater air intake improves engine "breathing" and gives better power

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up you'll need to put in the clutch and shift into reverse, but unless gear change conditions arise you can stop-and-go drive all day without touching clutch or gear shift.

Acceleration figures aren't available on the unit, but don't figure on any traffic light drag racing. Plymouth reports a 2.56 to 1 torque ratio with the unit, but taking the shift out of driving takes much of the standing accelerating out, too.

Developments Yet—R. C. Somerville, Plymouth vice president, says that announcement of "Hy-Drive" does not mean Plymouth has forsaken the idea of offering a fully automatic transmission i.e. with actual transmission shifting automatically.

However, the need for something must have been definitely felt at Plymouth. Last year 2,057,011 new cars carried automatic transmissions while 1,654,457 carried the manual shifter. Powerglide was introduced by Chevrolet in 1950, while Fordomatic entered the arena in 1951.

February Output Soars

Despite tightening cold-rolled steel sheet deliveries, short-month February car output should exceed January levels, says *Ward's Automotive Reports*. Projected figures indicate 486,000 units will roll off the assembly lines as the production pace returns to normal following changeover. January output totaled only 465,745 units.

Blamed for the tightening cold-rolled sheet situation are: Heavy ordering, labor unrest in newly-built steel mills and defense set-asides. However, scare buying by the automakers could be contributing to an exaggerated shortage picture.

So far this year General Motors, Ford and Chrysler are building 89.3 per cent of car production compared with 86.6 per cent in 1952, says *Automotive News*. Meanwhile Kaiser-Frazer shut down a week for "inventory adjustment" and Studebaker is having new model production problems after its rash of publicity.

Studebaker hopes to have sedans at dealers for showings on Feb. 16 as planned, but hard-tops are still somewhat in arrears.

Ask Ladies Over 40

A Ford Motor Co. stylist confirms the statement in this column last week that Lincoln is worried about its similarity to the rest of the Ford line. He goes on to report that fewer average people can pick out the Lincoln on the street in silhouette than any other car. Here's the way the conclusion was reached:

Each year Ford prepares cutouts of all the major makes with name plates on hood and hub caps removed. Then a group of housewives over forty, the most naive bunch of people in the country when it comes to cars, are asked to identify all the cars they can.

It's mayhem to Ford, but Cadillac is most recognized by these unexperts. Right down at the bottom is Ford's own standard of the world, Lincoln, inextricably confused with Mercury and Ford. The situation is due for correcting next year, for Lincoln put its eggs heavily in the horsepower basket in '53 models.

Auto, Truck Output

U. S. and Canada

	1953	1952
January	613,517*	409,406
February		467,691
March		517,207
April		576,505
May		546,673
June		560,947
July		246,461
August		293,722
September		592,253
October		645,862
November		556,366
December		*569,456
Total		*5,981,626

Week Ended	1953	1952
Jan. 10	139,620	92,669
Jan. 17	148,718	98,669
Jan. 24	149,578	94,722
Jan. 31	150,289	102,402
Feb. 7	148,430	102,406
Feb. 14	151,000*	111,821

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary

Nylon Does It

U. S. Rubber Co. announces a new "Lifewall" tire which, the company claims, offers the first positive blowout prevention in automotive history, at least since the solid rubber tire.

The not-so secret of blowout prevention is a double layer of nylon cord which is built into the inner air chamber. Demonstrating its toughness, a tire was driven over a five-inch steel spike and heavy concrete blocks. As a clincher, a car was driven around without the outer tire at all—clad only in its nylons.

Price Control Exemption

Exempted from price controls as insignificant in the market by OPS are: Sales of all models of used passenger automobiles prior to 1946 models; custom-built passenger automobiles; foreign-made used passenger automobiles; and sales of modified passenger automobiles.

"Modified passenger automobiles" was a particularly interesting government release. It read in part: "This group includes the so-called hot-rod and special sport, speed or appearance vehicles which have been built by individuals, usually at considerable expense, often as a result of experiment or hobby . . . Taxicabs which are usually altered to adapt them to their special use are not exempted by this action."

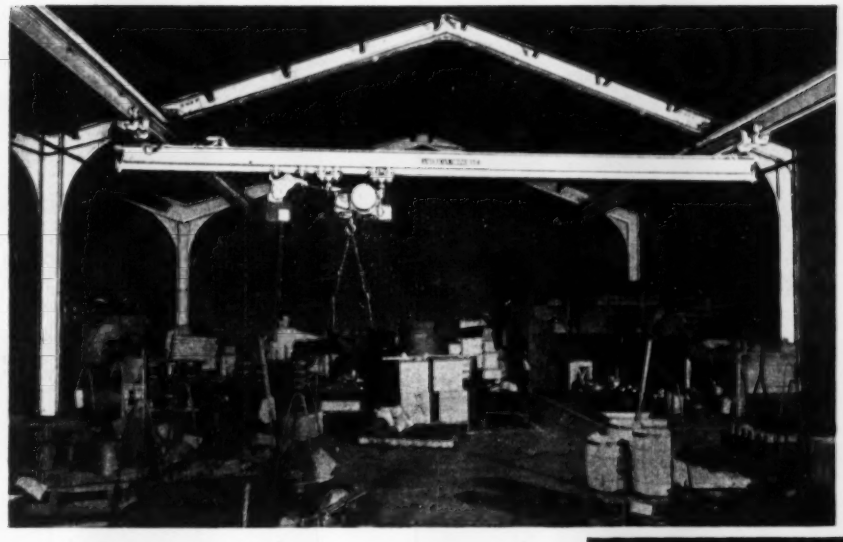
And that, in Washingtonese, seems to cover the subject in case there was any confusion.

Short Men Included

Nash dealers, "regardless of size," are being polled on what models and optional equipment they desire for the market in their areas, reveals H. C. Doos, v-p. sales. Tabulations from across the country in percentage of models and optical equipment desired are reflected in Nash production schedules and distribution procedures for the months ahead.

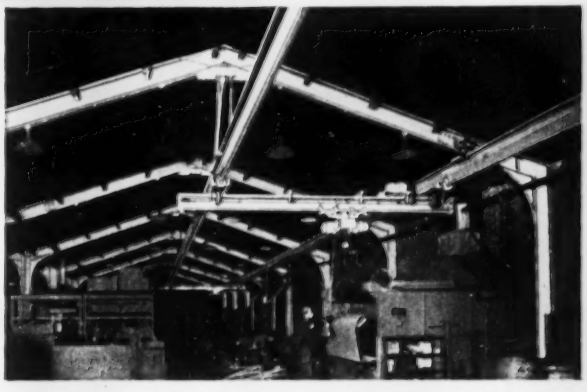
Air Force Study Group Reports

Spending for Air Force stocks of spare engines and parts can be cut by several hundreds of millions of dollars, a special Air Force study group reports. It can be done by cutting delivery time, by recalculating needs of the program and by working out better distribution methods for the more expensive items.



Photos courtesy of The Thew Shovel Co., Lorain, Ohio.

Rigid frame structure by The Steelcraft Mfg. Co., Rossmoyne, Ohio.



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SHARON* DEVELOPED SPECIAL STEEL MAKES TELEPHONE BELLS RING TRUE

Shortages of critical materials often force the use of substitutions. This happened in the telephone industry, where recently a manufacturer of phone bells — cut off from his supply of copper and brass—began looking for a suitable replacement.

Steel was still on the unrationed list, but bells formed of available steel didn't produce the required ringing tone. That is until Sharon Steel was asked to develop a steel of a temper that could be formed into bells with the required tone.

Sharon engineers went to work and in a short time developed a steel that fills the bill so effectively it is expected to become standard regardless of the availability of the materials formerly used.

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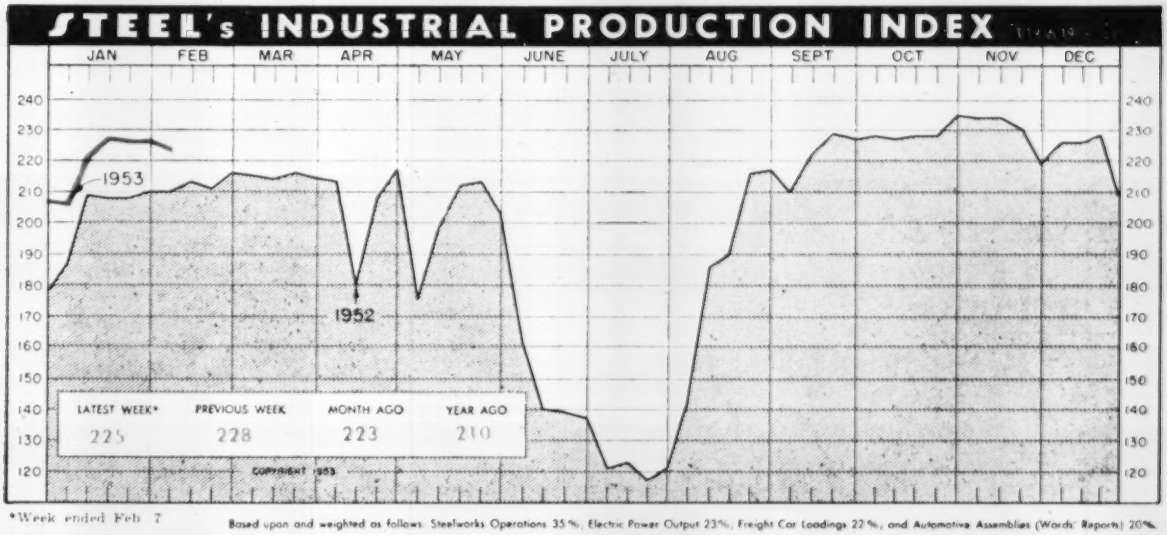


*Week ended Feb. 7

Based upon and weighted as follows: Steelworks Operations 35%, Electric Power Output 23%, Freight Car Loadings 22%, and Automotive Assemblies (Wards' Reports) 20%.

More workers may be available to industry when defense hirings level out. Potential labor force is increasing. Index dips as steel production drops slightly

EMPLOYMENT, a good yardstick of economic momentum, is continuing to smash previous records for the winter season.

The Commerce department says that civilian employment in the week ended Jan. 10 totaled 60,524,000 workers, the highest January figure on record. Unemployment in January had declined 0.3 per cent from January, 1952, to 1.9 million jobless, or only 3 per cent of the nation's total workforce. This is tight employment by almost anyone's standards.

More Potential—Although many manufacturers are scrambling for even unskilled workers, the supply of available manpower may improve more quickly than some persons believe. Our civilian noninstitutional population of 14 years of age or over has risen 1.4 million to about 110,648,000 persons during the past year. Employment, on the other hand, has climbed only 750,000 during the same period. Many persons over 14 years, of course, are homemakers, or still in school or too old for most jobs. Nevertheless, the rise in potential manpower is great.

This means that more persons may be available to industry when the defense program levels out. Manpower supplies will continue to climb as the rate of industrial hirings tapers off.

Index Edges Down—Production is remaining near the high level attained in January. STEEL's industrial activity index in the week ended Feb. 7 edged down 3 points to 225 per cent of the 1936-1939 average. Highwater mark for January was 229 per cent in the week ended Jan. 17. A slight drop in steel production in the week ended Feb. 7 caused the 3-point decline, as workers went on strike at the Indiana Harbor, Ind., Works of Inland Steel Co. Automotive operations, freight car loadings and electricity production that week remained near the levels attained in the previous week.

Auto Output Nears Peak . . .

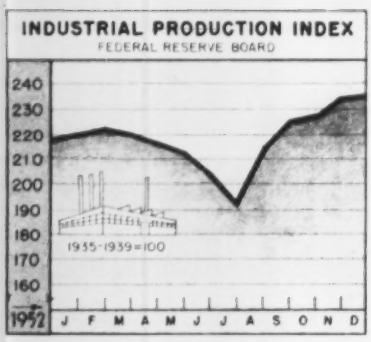
Monthly output of passenger cars may level out at a "return to normal" pace in February. U. S. automakers in January raised production 45,463 units to 465,745 passenger vehicles, despite model changeovers and a two-week inventory shutdown at Kaiser-Frazer Corp. The February total is expected to reach 486,000 automobiles, if things go without a hitch. This 486,000-unit volume — in a short workmonth, too — would top the 1952 high of 479,938 passenger cars in October and would march along with the good production months of 1951.

Truck production is rumbling steadily toward the industry's goal for the first quarter. Built in January were 111,247 trucks, the scheduled volume. At that rate the truck industry will complete about 345,000 assemblies in the first three months of 1953. Authorized output is for 300,000 trucks, but upwards of 350,000 units are permissible since the industry may draw on May-June allotments of materials.

Combined U. S. and Canadian auto-truck operations are remaining around 45 per cent over the same weeks in 1952. Production in the week ended Feb. 7 totaled 148,430 passenger cars and trucks, compared with 102,406 units produced by the two nations during the comparable week in 1952.

Manufacturers' Sales Up . . .

Manufacturers' sales in 1952 rose 3 per cent to $276.5 billion, according to the Commerce department's Office of Business Economics. This increase reflects a gain in physical

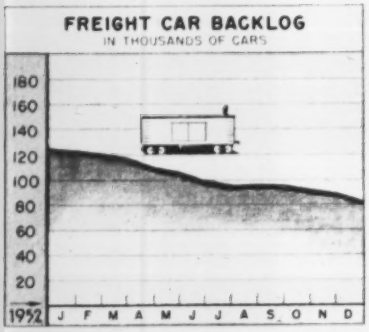


Industrial Production Index

1935-1939 = 100

	Total Production 1952	Total Production 1951	Iron, Steel 1952	Iron, Steel 1951	Non-ferrous 1952	Non-ferrous 1951
Jan	220	221	261	255	215	224
Feb	222	221	261	252	217	218
Mar	220	222	262	263	218	212
Apr	216	223	245	264	219	210
May	211	223	245	263	220	206
June	203	221	142	261	212	205
July	193	222	141	253	201	199
Aug	215	217	241	254	212	198
Sept	224	219	267	257	221	201
Oct	227	218	276	261	228	202
Nov	234	219	283	261	240	206
Dec	234	218	288	263	243	210
Avg	218	220	243	259	220	207

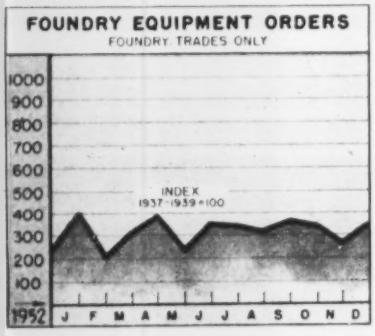
Federal Reserve Board



Freight Car Awards and Backlogs

	Awards 1952	Awards 1951	Backlogs* 1952	Backlogs* 1951
Jan	5,338	26,356	120,251	144,758
Feb	7,348	15,947	118,500	141,861
Mar	5,619	11,271	115,554	138,618
Apr	397	6,628	108,270	135,871
May	2,502	1,919	103,910	130,628
June	3,264	6,792	99,615	127,726
July	1,536	2,417	96,264	124,810
Aug	1,598	1,828	95,761	120,014
Sept	3,628	9,657	96,377	116,135
Oct	1,123	3,161	90,708	112,792
Nov	2,878	6,752	87,647	120,158
Dec	1,158	3,366	80,296	123,947
Total	37,261	96,190		

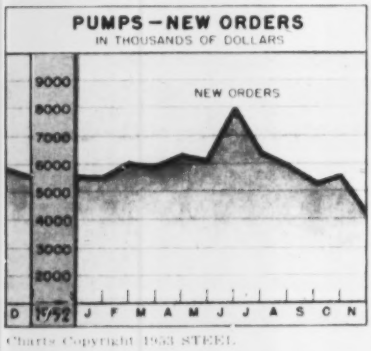
*End of month
American Railway Car Institute



Foundry Equipment Orders

	Index (1935-1939 = 100) 1952	Index (1935-1939 = 100) 1951	Value, Thousands 1952	Value, Thousands 1951
Jan	401.5	668.0	$1,862	$3,075
Feb	200.4	638.6	922	2,940
Mar	310.0	599.0	1,427	2,758
Apr	385.1	490.1	1,773	2,256
May	225.2	431.7	1,037	1,987
June	353.8	393.2	1,629	1,810
July	243.9	390.3	1,583	1,797
Aug	311.6	404.5	1,434	1,862
Sept	365.9	346.5	1,685	1,595
Oct	335.8	372.4	1,548	1,714
Nov	258.1	305.5	1,183	1,406
Dec	343.3	230.5	1,573	1,061

Foundry Equipment Mfrs. Assn.



Pumps, New Orders

In Thousands of Dollars

	1952	1951	1950
Jan	5,517	6,477	2,586
Feb	6,020	6,480	2,938
Mar	5,926	7,654	3,313
Apr	6,354	7,583	3,376
May	6,140	6,371	3,668
June	7,957	6,852	4,153
July	6,299	8,358	4,080
Aug	5,921	5,911	6,429
Sept	5,258	6,562	5,191
Oct	5,534	6,506	4,985
Nov	4,130	5,905	5,961
Dec		5,553	6,720
Total		80,175	53,400

Hydraulic Institute

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction	Nov. 24	Ironers	Feb. 9	Refrigerators	Feb. 2
Durable Goods	Jan. 18	Machine Tools	Feb. 9	Steel Castings	Jan. 12
Employ. Metalwkg.	Jan. 18	Malleable Castings	Jan. 12	Steel Forgings	Jan. 12
Employ., Steel	Dec. 15	Prices, Consumer	Jan. 26	Steel Shipments	Nov. 3
Fab. Struc. Steel	Feb. 9	Prices, Wholesale	Jan. 26	Vacuum Cleaners	Feb. 9
Furnaces, Indus.	Feb. 2	Radio, TV	Feb. 2	Wages, Metalwkg.	Jan. 26
Gear Sales	Jan. 26	Ranges, Gas	Jan. 18	Washers	Dec. 29
Gray Iron Castings	Jan. 12	Ranges, Elec.	Feb. 2	Water Heaters	Jan. 18

volume since prices, for the most part, eased throughout the year.

Sales of durable goods industries rose 5 per cent to $132.8 billion. The machinery, transportation equipment, instruments and furniture industries reported sales increases from the previous year. Billings of transportation equipment, other than automotive, made the sharpest rise—nearly 33 per cent. Deliveries of metals, due largely to the steel strike, declined a little from the previous year.

Manufacturers' inventories on Jan. 1, 1953, were estimated at $43.6 billion, on a seasonally adjusted basis. This marks an advance of around $600 million for the year. The value of inventories moved downward in the first half of 1952, but this decrease was more than made up during the second half.

Foundry Equipment Down . . .

Orders for foundry equipment have apparently leveled out well under the dollar volume of orders in the early days of post-Korea expansion. The Foundry Equipment Manufacturers Association says that incoming orders during December totaled $1.6 million (see chart, left). In January, 1951, manufacturers of foundry equipment received $3.1 million in new orders.

Retail Sales Inch Up . . .

Retailers in 1952, after getting off to a bad start, chalked up a sales volume 4 per cent over 1951. The Census Bureau reports that total sales of retail stores last year amounted to $164 billion, compared with $158 billion in 1951. During the first quarter of the year, retail sales fell 4 per cent under the corresponding months in 1951.

Stoker Sales Decline . . .

Sales of mechanical stokers declined 6 per cent in 1952, according to the U. S. Census Bureau. Factory sales of all types of mechanical stokers last year totaled 22,582 units, compared with 24,091 units in 1951. Indicating perhaps a leveling-off in many defense outlays on large equipment, sales of heavy industrial stokers dropped to 479 units from 770 stokers sold

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	97.5	99.5	100.0
Electric Power Distributed (million kwhr)	8,140[1]	8,151	7,456
Bituminous Coal Output (daily av.—1000 tons)	1,475	1,530	1,733
Petroleum Production (daily av.—1000 bbl)	6,530[1]	6,522	6,363
Construction Volume (ENR—millions)	$288.5	$599.9	$167.1
Automobile, Truck Output (Ward's—units)	148,430	150,289	102,406
TRADE			
Freight Car Loadings (unit—1000 cars)	700[1]	698	734
Business Failures (Dun & Bradstreet, number)	136[1]	162	134
Currency in Circulation (millions)[3]	$29,657	$29,592	$28,378
Dept. Store Sales (changes from year ago)[4]	+ 2%	+ 2%	8%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$17,925	$17,292	$17,455
Federal Gross Debt (billions)	$267.4	$267.3	$259.8
Bond Volume, NYSE (millions)	$17.8	$18.3	$13.0
Stocks Sales, NYSE (thousands of shares)	8,893	8,208	7,531
Loans and Investments (billions)[5]	$77.3	$77.7	$74.0
United States Gov't. Obligations Held (billions)[5]	$31.7	$32.0	$32.4
PRICES			
STEEL's Weighted Finished Steel Price Index[6]	181.31	181.31	171.92
STEEL's Nonferrous Metal Price Index[6]	210.7	213.4	243.6
All Commodities[7]	109.3	109.5	113.5
All Commodities Other Than Farm and Foods[7]	112.7	112.8	114.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1952—2,077,040; 1951—2,254,150. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939—100. [6]1936-1939—100. [7]Bureau of Labor Statistics Index, 1947-1949—100.

in 1951. Despite considerable home-building in 1952, homeowners showed increasing dislike to pay higher prices for coal; thus, sales of residential bituminous stokers plunged 25 per cent in 1952.

Dryer Sales Jump . . .

Housewives are snapping up automatic dryers and passing up washers and ironers. Answer to this is that the market for dryers is probably much further away from saturation. The American Home Laundry Manufacturers' Association says factory sales of automatic tumbler dryers in 1952 rose 26 per cent to 614,677 units. Sales of standard-size household washers declined 6 per cent to 3,301,123 units during last year. Sales of ironers in 1952 plunged 27 per cent to 202,143 units.

New Companies Increase . . .

Formations of new companies last year rose 10.9 per ceat over the previous year, but remained well under the first three years following World War II. New stock corporations chartered in 1952 totaled 92,758, compared with 83,649 enterprises in 1951 and 92,925 new corporations in 1950, says Dun & Bradstreet Inc. Company formations reached a peak 132,916 during 1946—followed with 112,638 firms in 1947, 96,101 firms in 1948 and 85,491 new incorporations in 1949.

Electricity Output Strong . . .

Distribution of electric energy is running about 7 per cent over the comparable weeks in 1952. Edison Electric Institute says the nation's utilities in the week ended Jan. 24 produced 8.1 billion kilowatt-hours, compared with 7.6 billion in the comparable week of 1952. Electricity output in the Central Industrial region of the U. S. has been 8 to 9 per cent over the same weeks in 1952.

Trends Fore and Aft . . .

Wholesalers' sales in 1952 declined $1 billion to $106 billion. Physical volume, however, rose slightly in 1952 as declining prices accounted for the lower dollar volume. . . Freight car loadings are still lagging about 5 per cent behind the comparable weeks in 1952. . . Wholesale prices declined 3.7 per cent in the past year. . . Bank clearings are rising 2.7 per cent over the comparable weeks in 1952. . . Production of truck-trailers totaled 60,000 units in 1952. . . Business failures are slightly under company mortalities in the comparable weeks of 1952.

Which kind of Cold Rolled Strip Steel is best for You ?

CONSIDER SHEET COIL

—if variations in physical characteristics are permissible.
—if fairly heavy oversize gauge variations are not objectionable.
—if the fabricating operations are not too complicated and do not require intricate expensive dies.
—if a fine surface finish is not essential.
—if a good base for paint or enamel is desired.
—if you do not object to some "square footage" loss due to oversize variation.
—then Sheet Coil will probably be the most economical material for the job.

CONSIDER THINSTEEL

—if you must have a high degree of uniformity of chemistry and physical properties—and precision gauge tolerances.
—if you wish to keep die wear low, no oversize gauge variations.
—if you require a fine finish or a better base for plating.
—if you want maximum yield for "most finished parts per ton."
—if you want selected tempers for maximum strength and lightest weight.
—then you'll find Thinsteel the most economical material by far.

No Argument Here.... Kenilworth Stocks Both

You can always count on Kenilworth helping you get the right steel for your requirements. Order Sheet Coil or Thinsteel and notice that each coil carries an identifying tag as pictured above. Call on Kenilworth, too, for your needs in Stainless Sheets or flat rolled Spring Steels (Annealed or hardened and tempered).

THE Kenilworth Steel co.

750 BOULEVARD,
KENILWORTH, NEW JERSEY

SPECIALISTS IN FLAT ROLLED METAL PRODUCTS

Telephones N. Y. COrtlandt 7-2427
N. J. UNionville 7-6900
Teletype: Roselle, N. J., 387

IT'S PERFORMANCE THAT COUNTS

... there's more to a champion than the tape measure shows!

Champion Pitcher . . .
he keeps control in the tight spots!

Average Pitcher . . .
he may measure the same . . . but he loses the tight games.

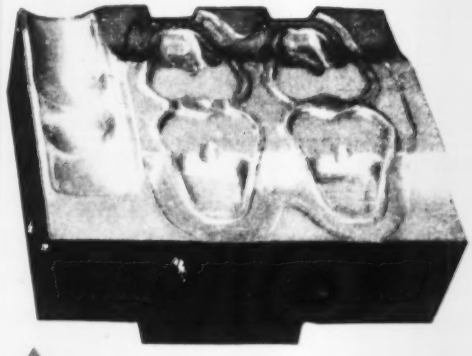
HARDTEM DIE BLOCKS

perform like "champions" in your production line!

Heppenstall Hardtem Die Blocks perform like "champions" because they possess those extras that result in superior quality. Their patented steel analysis resists softening and heat checking in service. Records from plants using Hardtem Die Blocks prove the following benefits for production:

- Long life of dies
- Less down time
- Lower overall die cost
- Holding of true dimensions
- Longer production runs

It will pay you to try Hardtem Die Blocks. Call Heppenstall Company, Pittsburgh 1, Pa. Sales Offices in principal cities.



Heppenstall

... the most dependable name in die blocks

Men of Industry

D. RUMSEY PLUMB
. . . president, Fayette R. Plumb Inc.

PAUL E. KELLY
. . . Superior Tube V. P.-treasurer

BENNETT BURGOON JR.
. . . div. sales mgr. at Kennametal

D. Rumsey Plumb now heads **Fayette R. Plumb Inc.**, Philadelphia. He succeeds his father, **Fayette R. Plumb**, who served as president for 48 years and is now chairman of the board. **Frank L. Campbell** was elected executive vice president and sales manager; **Frank P. Green** vice president and merchandise director; **Calvin P. Bascom**, vice president and general manager of the St. Louis plant; **William D. Plumb** treasurer and secretary; and **George R. Beck** assistant secretary.

Hugh F. Colvin was elected vice president and treasurer, **Consolidated Engineering Corp.**, Pasadena, Calif. He is now co-ordinating activities of Consolidated's recent acquisition, Consolidated Vacuum Corp., Rochester, N. Y., with those of the parent company in Pasadena. This new corporation will be an independent operation for manufacture and sales of high vacuum equipment and high vacuum systems engineering.

Osborn Engineering Co., Cleveland, elected **James J. LaSalvia** president, **Homer T. Borton** vice president, **Noble W. Herzberg** secretary, **Ralph E. Scott** treasurer, **Vernard H. Kotz** assistant treasurer.

Walton M. Dallas was named manager of manufacturing control at **Temco Aircraft Corp.**, Dallas.

Paul E. Kelly was named vice president, **Superior Tube Co.**, Norristown, Pa., and continues as treasurer. **Charles E. Pugh** was named secretary in addition to his duties as assistant treasurer and comptroller. **James C. Turner** becomes assistant secretary and assistant treasurer.

Walter DeRoche was named sales manager and chief tool engineer of **Abco Tool & Die Co.**, Madeira, O. In the tool and die business for over 30 years, he has been for the last five years in charge of the tool division, engineering and sales of Hamilton Tool Co.

Columbia Steel & Shafting Co., Pittsburgh, appointed **Ross Saylor** sales associate. He previously was with Edgecomb Steel Co. of New England as a director and general manager at Nashua, N. H.

Rodney Hunt Machine Co., Orange, Mass., appointed **Langdon M. Phillips** assistant sales manager. He has been with the company for the last four years, and has served as field sales manager.

T. F. Boyle, assistant to district engineer, Alameda, Calif., works, **Bethlehem Pacific Coast Steel Corp.**'s fabricated steel construction division, was promoted to works engineer.

Bennett Burgoon Jr. was made sales manager, metalworking division, **Kennametal Inc.**, Latrobe, Pa. He has been serving as assistant to the company's general sales manager.

In the R-P&C Valve Division, **American Chain & Cable Co.**, **William Wagner**, New York district sales manager, was transferred to Reading, Pa., as a member of the general sales staff. **Jerome V. Gasso** was made district sales manager at New York, and **Edward A. Antonelli** district sales manager, Atlanta.

Hobart E. Switzer was appointed purchasing agent of **Electric Regulator Corp.**, Norwalk, Conn. He was with Diebold Inc., Flofilm Division.

Jay Electric Co., Detroit, appointed **L. A. Williams** vice president in charge of production; **C. P. Fletcher** vice president-director of sales and engineering; **John J. Weaver** assistant secretary and treasurer; and **Earl W. Henry** supervisor of material and purchases. **Hugo Kummer** is plant superintendent.

Chain Belt Co., Milwaukee, made the following appointments in its Baldwin-Duckworth Division. **Edward M. Rhodes** was named assis-

ant to the general manager, **Roland V. Poisson** assistant sales manager, and **William E. Kennedy** Jr. supervisor, automotive timing chain sales.

Electro Metallurgical Co. of Canada Ltd., unit of Union Carbide & Carbon Corp., Toronto, appointed **G. O. Loach** assistant manager of its Welland plant. He has been with the company since 1945 and a director and vice president since 1951.

Marsh Steel Corp., North Kansas City, Mo., designated **W. Richard Means** of Denver as a director.

Robert E. Bartley, former chief inspector in the methods department of **F. E. Myers & Bro. Co.**, Ashland, O., was named to the newly created job of quality control manager.

Donald C. Burnham was appointed assistant chief engineer in charge of body, sheet metal and chassis design at **Oldsmobile Division**, General Motors Corp., Lansing, Mich. **Lowell A. Kintigh** was named assistant chief engineer in charge of engine, transmission, experimental test and development. Succeeding Mr. Burnham as manufacturing manager is **Robert T. Rollis**, formerly chief inspector.

Furnas Electric Co., Batavia, Ill., appointed **Walter A. Meyer** general sales manager in charge of sales and publicity.

Emil A. Vierow was made superintendent of the Youngstown district fuel and power department of **Youngstown Sheet & Tube Co.**

F. J. Sherwin was elected president, **Chicago Hardware Foundry Co.**, Chicago, to succeed his brother, the late **Edward B. Sherwin.**

Gordon C. Brown, formerly sales manager, Fibron (Plastics) Division, **Irvington Varnish & Insulator Co.**, Irvington, N. J., was promoted to vice president of the company and general manager of the division. **Bernard M. Hoey** succeeds as sales manager.

Earl K. Loverud was appointed general sales manager, **Bready Tractor & Implement Co.**, Solon, O. He will have headquarters in Cleveland. Mr. Loverud has been in charge of sales of Milwaukee Equipment Mfg. Co.

WILBUR C. STAUBLE
. . . new president of Holo-Krome Screw

Wilbur C. Stauble was elected president and chief executive officer of **Holo-Krome Screw Corp.** and a director and member of the executive committee of the parent company, **Veeder-Root Inc.**, Hartford, Conn., to fill vacancies caused by resignations of **United States Senator William A. Purtell.** Mr. Stauble, who with Mr. Purtell and others founded Holo-Krome Screw Corp. in 1929, has been its executive vice president since 1942.

A. Leo West was elected treasurer, **Clearing Machine Corp.**, Chicago, to succeed **J. R. Bartizal,** executive vice president, who has been acting as treasurer in addition to his other duties.

B. E. Ball was appointed cashier in the treasury division of **Jones & Laughlin Steel Corp.**, Pittsburgh, to succeed **E. L. Hendrickson,** retired.

Walter H. McCann, with **National Supply Co.**, Pittsburgh, since 1936, was appointed supervisor of tubular sales for its eastern division. He succeeds **Walter Wirth,** retired.

Walter F. Tobias was appointed assistant works manager at the Kenosha, Wis., automotive division of **Nash-Kelvinator Corp. E. D. Stinebower,** quality director, was named plant general superintendent succeeding Mr. Tobias.

Arnold W. Johnson was elected treasurer, **Economy Engineering Co.**, Chicago, manufacturer of materials handling equipment.

PAUL B. BEST JR.
. . . joins Hupp Corp.

Paul B. Best Jr. joined **Hupp Corp.**, Detroit, as general sales manager. He will have executive direction of all Hupp automotive sales, which includes the Hupp-ABF Regulator Products Division, Detroit, and Globe Stamping Division, Cleveland. His headquarters will be at Detroit. Mr. Best has been vice president in charge of series motor sales at Redmond Co.

New positions in the factory sales organization of Alemite Division, **Stewart-Warner Corp.**, Chicago, are filled by **Huntington Eldridge** as assistant distribution sales manager; **H. J. Howerth** as head of farm market sales development; and **G. W. Mullin,** who joins the factory sales as a national accounts representative.

May-Fran Engineering Inc., Cleveland, appointed **Walter A. Stuhr** as regional sales engineer in charge of its new midwestern office in Chicago.

C. F. Herbold assumes the newly created position of director of industrial relations at **Jack & Heintz Inc.**, Cleveland.

Clair C. Stephens was appointed manager, welded order department, **Spang-Chalfant Division,** National Supply Co., with offices in Pittsburgh. He succeeds **L. C. Beall,** retired.

J. S. Liefeld was made factory manager of **Marquardt Aircraft Co.**, Van Nuys, Calif. He previously

"John, this building of mine holds a

cost-cutting *Tip-Off*

from ONE BUSINESSMAN TO ANOTHER"

"What is it?" asked John, a prominent appliance manufacturer.

The contractor answered, *"Simply this: don't take your fasteners for granted!*

"An RB&W man showed me how a switch in fasteners could help me make field connections much more economically.

"He suggested switching from rivets to high strength bolts. They cost more than rivets initially, but the assembled cost is much lower. My men work faster than with rivets. The building goes up faster."

You, too, can find a cost-cutting lesson from this story, whether you're in construction* or any other industry.

MORAL: Look to your fasteners for an often overlooked opportunity to reduce costs, and strengthen your competitive position. New inventions, like RB&W's SPIN-LOCK Screw, may prove more efficient than the fasteners you're now using. Or you may save by the stepped-up production you get from using the finest fasteners . . . RB&W bolts, screws, nuts and rivets of uniform accuracy, dependability and physical properties.

Let RB&W help you make the most efficient use of fasteners on your assembly line. Address RB&W at Port Chester.

RB&W—The Complete Quality line. Plants: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices: Philadelphia, Pittsburgh, Detroit, Chicago, Dallas, Oakland. Sales agents: Portland, Seattle. Distributors from coast to coast.

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

*If you're interested in construction, write RB&W at Port Chester for a free reprint of the recent article, "No More Riveting."

RB&W 108 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

ALEXANDER B. FREEMAN
. . . *American Metal Hose V. P.*

L. A. WATTS
. . . *eastern div. sales mgr., CF&I*

HOWARD C. WILLIAMS
. . . *gen. sales mgr., Continental Steel*

was with Aircraft Metal Forming Co.

Alexander B. Freeman was appointed vice president, **American Metal Hose Branch,** American Brass Co., Waterbury, Conn. Since 1950 he has been general manager.

Texas Eastern Transmission Corp., Shreveport, La., appointed **H. M. McDonald** general superintendent and **Paul L. Hughen** pipeline superintendent. **Carl R. Sisson** replaces Mr. Hughen as manager of the corporation's division three in West Chester, Pa., and **Murrell Carlisle** replaces Mr. Sisson as assistant manager of that division.

L. A. Watts was named general manager of sales of the eastern division, **Colorado Fuel & Iron Corp.,** New York. Since 1951 he has been assistant general manager of sales, Wickwire Spencer Steel Division.

White Motor Co. placed **P. E. Tobin** in charge of a new North Atlantic region with headquarters in New York. He has been manager of the New York metropolitan region for the last 12 years. His enlarged territory includes all of New England, Albany and Utica, N. Y., in addition to the metropolitan area in New York.

Howard C. Williams, sales manager in the sheet division, was promoted to general sales manager, **Continental Steel Corp.,** Kokomo, Ind. **F. A. Lewis,** sales manager, chain link and ornamental fence division, advances to sales manager, merchant trade division.

Robert M. Griffin was named sales representative for **Automatic Transportation Co.** at Phoenix, Ariz.

Harold Raynor was named administrative director, missile and control equipment departments, at

(*Please turn to Page* 104)

OBITUARIES...

Irving F. Wolfgram, 60, assistant to executive vice president and superintendent of coke ovens and blast furnaces, **Alan Wood Steel Co.,** Conshohocken, Pa., died Feb. 1.

Daniel Gurney, 52, vice president and director of engineering of **Marlin-Rockwell Corp.,** Jamestown, N. Y., died Feb. 3.

William W. Wells, 51, division engineering chief of **Atomic Energy Commission's** Portsmouth, O., area, died Feb. 2.

William Beaser, president, **Whitmore Mfg. Co.,** Cleveland, died Feb. 2.

Charles A. Booth, 77, executive vice president, **Buffalo Forge Co.,** Buffalo, died Jan. 31.

Samuel Koffsky, chief engineer, **Simmons Machine Tool Corp.,** Albany, N. Y., for 16 years, died Jan. 15.

Theodore M. Berry, 51, a section engineer of **General Electric Co.,** Schenectady, N. Y., who twice won the company's Charles A. Coffin award, died Feb. 3.

Walter J. Andree, general superintendent of **Canada Foils Ltd.,** Toronto, Ont., died Feb. 5.

G. Wesley Nutter, 41, manager of the Kent street plant of **General Electric Co.** in Utica, N. Y., died Feb. 2.

L. Harold Clark, 75, one of the founders of **J. L. Clark Mfg. Co.,** Rockford, Ill., died Feb. 2.

Stewart P. Trench, 58, president and publisher of *American Metal Market*, died at his home in New York Feb. 5.

Raymond E. Ginn, 57, vice president and general sales manager, **James H. Matthews & Co.,** Pittsburgh, died Jan. 24.

William A. Fannon, 89, head of **Magan Iron & Steel Co.,** Duluth, died at Appleton, Wis.

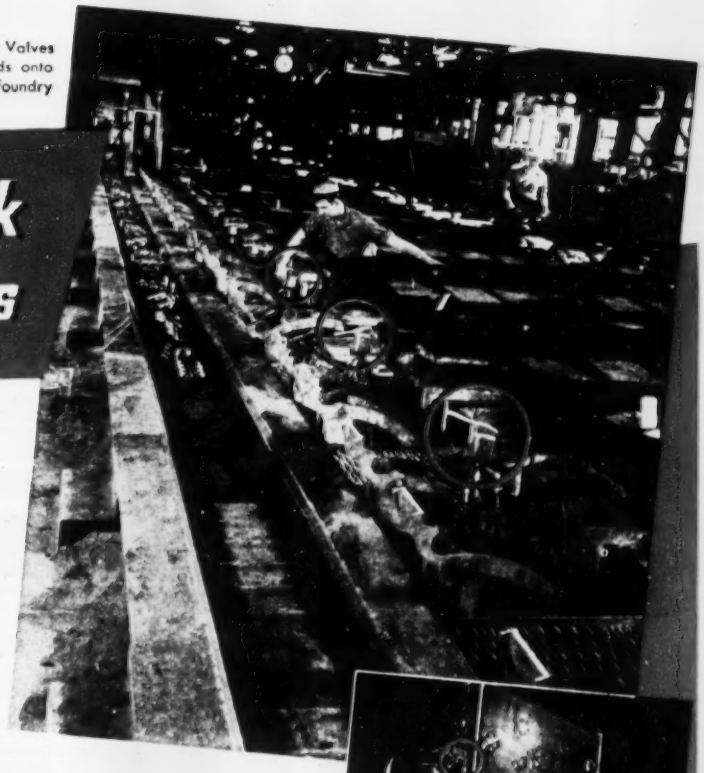
Howard W. Smith, 82, chief engineer, **Aetna Standard Engineering Co.,** Ellwood City, Pa., died Feb. 3.

Charles B. Fox, 78, retired vice president, **Aluminum Co. of America,** died Feb. 2 in St. Louis.

Gerald E. Stedman, 56, a business writer and contributor to industrial magazines, died Jan. 21. He resided in Waukesha county, Wis.

Hand Operated Air Valves Dumping Poured Molds onto Apron Conveyor in Foundry

Quick-As-Wink Control Valves

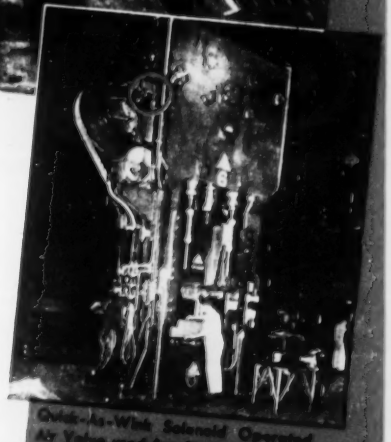


un-paralleled performance and dependability

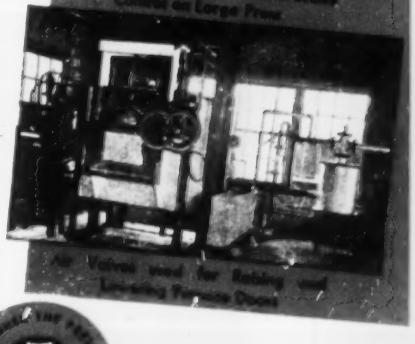
no after hours Siss-s-s-s

That low sizzling noise you hear out in the plant, after the work force has gone home, is there during the day too, only you can't hear it then. It's air. Seeping out through inferior valves it wastes from $5.00 to $500.00 per month — and — leaky valves mean sloppy machine control; danger of "repeating"; possible injury to the operator; or a break-down involving costly repairs, material spoilage, lost production and customer ill-will.

Stop that sizzling by installing Quick-As-Wink valves on your air and hydraulic controls. Positive and fast-acting Quick-As-Wink valves are designed and built with U-shaped packers that are expanded by pressure and seal tightly, preventing leaks, and minimizing the danger of break-downs and tie-ups. Recognized by operators, foremen and superintendents everywhere for unsurpassed air economy, high efficiency, low maintenance and long, trouble-free satisfactory performance.



Quick-As-Wink Solenoid Operated Air Valve used for Clutch and Brake Control on Large Press



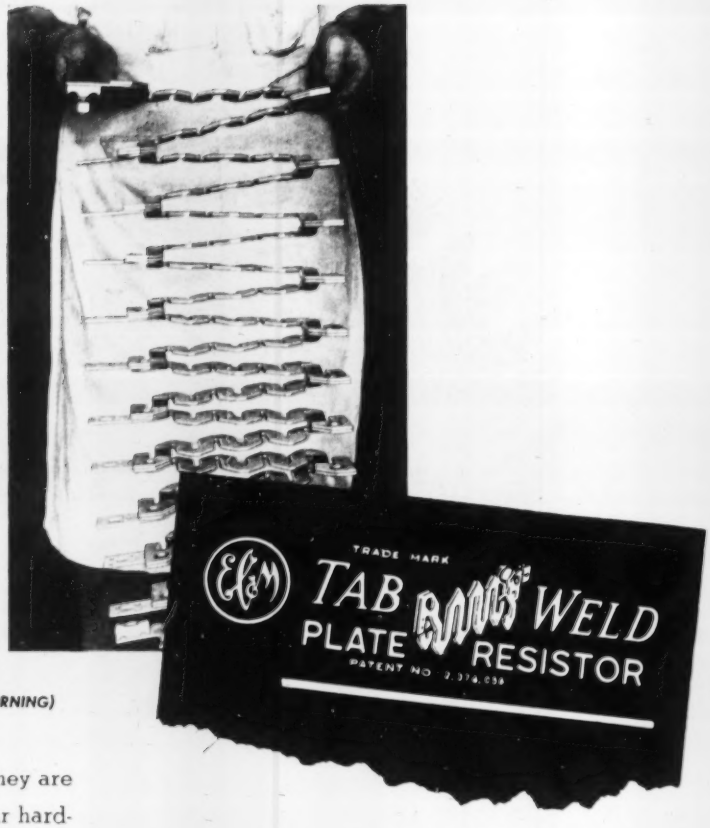
Air Valves used for Raising and Lowering Furnace Doors

Quick-As-Wink AIR AND HYDRAULIC Control Valves

Hand, Foot, Cam, Diaphragm and Solenoid Operated

Mfd. by C. B. HUNT & SON, INC., 1911 East Pershing St., Salem, Ohio

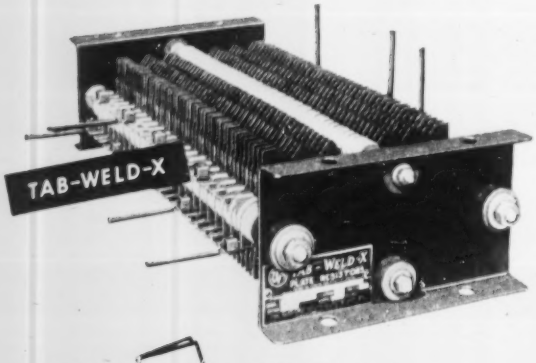
low priced yet...it includes Preventive Maintenance

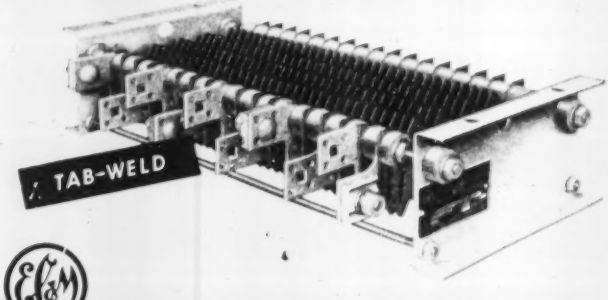


"F. O. B." *(FREE-OF-BURNING)*

Resistors get little attention, because they are usually mounted overhead or in similar hard-to-reach locations. Clamping-nut pressure slackens under alternate heating and cooling. Formerly, under the reduced pressure, OHMIC value changed, burning occurred and often was *not* noticed until damage took its toll.

But — note how resistor troubles are now eliminated in the EC&M TAB-WELD design! The current-carrying path is continuous — and is *independent* of end clamping-nut pressure. Convenient tap-plates simplify tap-shifting — make possible small adjustments in resistance value, because plates are closely spaced. Also, these alloy-steel resistors are corrosion-resisting — and have negligible resistance-change between cold and maximum working temperatures.





SPECIFY BULLETIN 942 EC&M Welded Plate Resistors

THE ELECTRIC CONTROLLER & MFG. CO.
2698 EAST 79TH STREET • CLEVELAND 4, OHIO

Production and Engineering
NEWS AT A GLANCE

SOMETHING FOR NOTHING—Simultaneous brazing and carburizing in the same salt bath is a natural. According to Ajax Electric Co. carburizing baths are ideal for brazing. The salt itself acts as a flux both for the brazing material and the steel. If after proper preparation for brazing the assembly is immersed in a carburizing bath, brazing takes place at the same time the parts are being carburized. Secret of brazing and carburizing steel subassemblies at the same time in the same bath is the ability of the molten salt to control temperature within 5 F over every part.

MORE MILES PER WHEEL—Does your operation entail the grinding of carbide-tipped cutters? If it does you are probably also putting a chip breaker or groove in some of them with a diamond wheel. There's an interesting sidelight on the selection and application of these wheels. By avoiding a wheel that's actually too wide for the job, you can save on initial cost and actually get longer wear out of the wheel. It all adds up to another good way to save on industrial diamonds. p. 72

GALLIUM GOES BEGGING—Despite its unique properties, gallium has yet to find a significant use. One of the weirdest performers in the family of metals, it melts at about 86 F but doesn't boil until 3600 F or higher. Like water it expands on solidification. It shows marked differences in electrical resistivity and coefficient of thermal expansion along the direction of the three axes of its crystallographic structure. Its electric resistivity variability is believed greater than for any other metal. It emits electrons at extremely low temperatures. Some of the tasks for which gallium is well suited are already satisfactorily performed by other metals or methods. Probably the biggest obstacle to wider use of gallium is its price of over $1000 per pound. If there were a market the price could be lower but if the price were lower a market might be found.

GERMANIUM HUNT—A search is on for additional sources of the costly metal germanium for use in radar and other electronic equipment of the Armed Forces among the ash pits of large industrial users of coal. Bureau of Mines is doing the work at the request of and in co-operation with the Signal Corps Engineering Laboratories. Search is concentrated on central station power plants that burn more than 100 million tons of coal yearly. The rare element is now produced in small amounts as a by-product of zinc refining. It also appears in minute quantities in many American coals but its recovery is uneconomical. The best method is to recover it from the ash. The compound recovered from the ash can be converted into metal by carefully controlled processes. Most popular uses of germanium are in electronic diodes for rectifying high frequency circuits and in the recently developed transistors. Most of domestic supply comes from Eagle-Picher's plant in Henryetta, Okla., and only one pound is recovered from every 2.5 million pounds of zinc ore handled. Annual output is currently about 6000 pounds but it's predicted the electronics industry will need 40,000 pounds yearly by 1956.

BRIGHT SPOT IN ALUMINUM—If you want to improve plated finishes on aluminum, check your surface conditioning treatment. To get the most corrosion resistant electroplates on aluminum, using zinc immersion, it's necessary to obtain good coverage with the thinnest possible zinc film. Zinc immersion procedure is now considered the most practical and economical method for plating on aluminum. It requires less time and equipment and is less critical to control than other methods. Good commercial plating on aluminum based on the zinc-dip treatment is an everyday practice. p. 76

SAVES NICKEL—A new type manganese-chromium stainless with only 1 per cent nickel is doing a good job at The Budd Co. Designated as TRC because of its first commercial application as a trailer-rail car steel this new grade stainless has the following composition: 15.0 per cent chromium minimum; 16.5 manganese nominal; 0.10 carbon maximum; 1.0 nickel maximum; and 0.15 nitrogen nominal. TRC was subsituted for previously used 18-8 type 301 without making tooling changes of any sort. Strength-wise it is the equivalent of 301. The test panels exposed in severe industrial atmosphere for a year have shown no evidence of attack. In salt spray TRC showed very slight attack, a shade less than straight chromium type 430, while 301 showed no signs of attack.

AUTO EYES ON PLASTIC—Use of some plastic for automobile bodies is causing more than a gentle ripple on the pool of car-making knowledge. Plastics won't be ready for the mass production car for some time yet, but all producers are eyeing the idea for the future. As one authority says, "It has one big advantage . . . It can be formed and shaped without the use of extremely expensive molds and heavy plant equipment." That alone will lead to extensive study. p. 79

SMALLER AND SMALLER—Miniaturization of control motor generator and motor generator gear train combinations for servomechanisms took another big step with the latest development by Transicoil Corp., New York. Their new 400-cycle motor generator weighs only 4 ounces and measures 0.9 inch in diameter. Phase voltage of the motor is 26 volts with a maximum stall power of 2.6 watts per phase and a minimum stall torque of 0.3 inch-ounce. Output of the generator is 0.34 volts at 1000 rpm.

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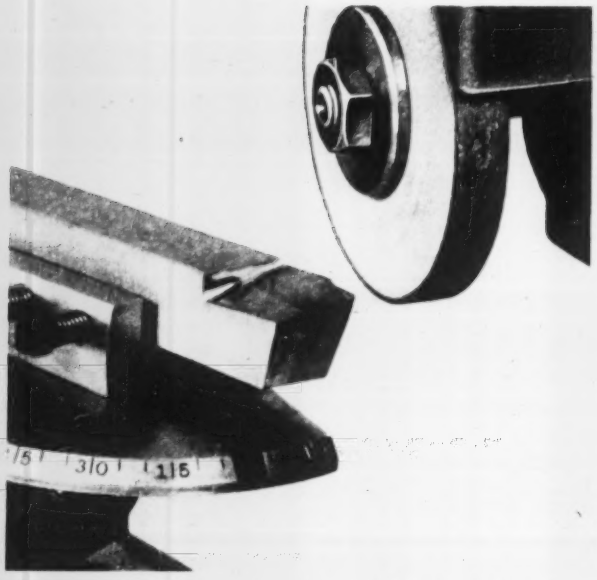
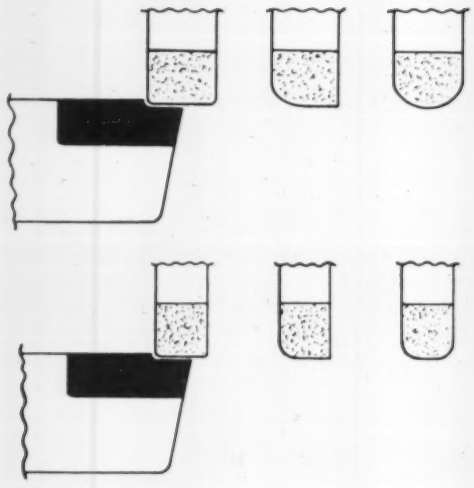


Carbide tool tip mounted under a diamond wheel for chipbreaker grinding. In this type grinder the wheel is power driven but the feeds are applied manually



Narrower wheel saves on initial wheel cost and also gives longer wheel life. Crown at the center of the wheel face is held to a minimum as in bottom view

Right Wheel Cuts Diamond Consumption

Chipbreaker grinding in carbide cutter tips is an operation where wheel life is important. Width of wheel, coolant and feeds all have an effect on this life

EFFORTS to conserve industrial diamonds are directed into every nook and cranny of the diamond-consuming operations. One which has received little attention is the grinding of chipbreakers on cemented carbide cutting tools.

Chipbreaker grinding is the operation of grinding a groove or step, usually the latter, into the top surface of a carbide tool. This groove or step curls and breaks the chip into safe, convenient lengths.

Hand Fed—Although the grinding may be done on a surface grinder or cutter grinder, it is more generally performed on a chipbreaker grinder. This is a miniature surface grinder and has similar controls for downfeed, crossfeed and table traverse. Only the wheel spindle is motor driven; all other movements are manual.

Wheels used for chipbreaker grinding are usually 6 inches in diameter. Using a smaller wheel on a machine built for a 6-inch wheel results in low peripheral speed of the wheel. This adversely affects wheel life and form-holding quality, both these features are of paramount importance.

Thinner Wheel — Proper wheel thickness will assist in form-holding. Chipbreaker width is often $\frac{1}{8}$-inch and in grinding practice a wheel twice as wide as the chipbreaker $\frac{1}{4}$-inch is sometimes used.

By reducing the wheel thickness to 3/16-inch or $1\frac{1}{2}$ times as wide as the chipbreaker a saving in initial wheel cost, as well as increased wheel life is realized.

Smaller Crown—With this smaller wheel, the center gets twice the wear of either corner. The crown at the center of the wheel face is held to a minimum. A flatter wheel face results and less truing of the wheel is necessary.

When it becomes necessary to recondition a chipbreaker wheel to remove the crown and restore a flat face, three methods are available. The wheel may be cylindrically ground between centers; it may be dressed on its own spindle using a tool-post grinder or it may be brought to proper condition using one of the various brake-retarded wheel dressers.

The Rub—These brake-retarded dressers consist of a dressing wheel in a small fixture which is placed on the machine table below the diamond wheel. The wheel drives the dressing wheel and the action is retarded by a brake on the dressing wheel spindle. A scrubbing action brings the chipbreaker wheel into acceptable condition.

Most common diamond wheel used in chipbreaker grinding is the

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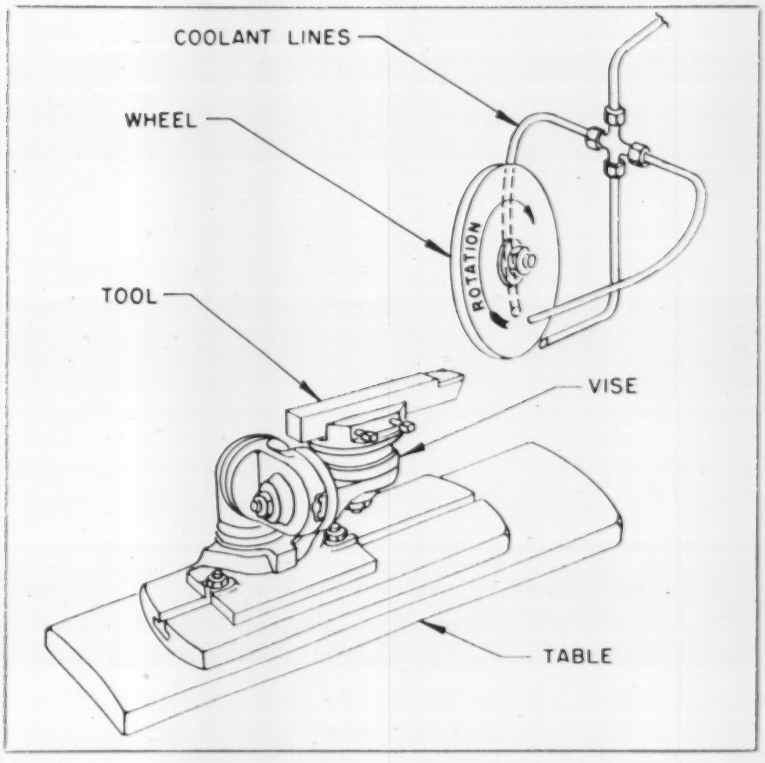


Arrangement for supplying coolant in chipbreaker grinding shows fluid directed at wheel from three directions. A nozzle is behind wheel; and one on each side

resinoid type. Resinoid diamond wheels have excellent form-holding qualities, particularly in the harder grades, and provide fast cutting action.

Cautious Advance—When resinoid wheels are used for grinding, downfeeds should not exceed 0.001-inch per pass 0.0005-inch is preferred. Table traverse may be rapid. Most chipbreaker machines are designed for drip or wick coolant supply, hence a flood of coolant is not always practical. Use of the wick or a mist cooling system is, however, much better than no coolant.

Considerable interest is currently being exhibited in diamond wheels of the metal bond type for chipbreaker grinding. The commonly-used grades of metal bond wheels are too hard for this application, however, and it is necessary to use a more free-cutting type such as our wheel in grading D100-K100-M.

Warning — Three precautions must be observed in order to obtain optimum performance: First, an adequate supply of coolant, in a circulating pump system, is required. Drip, wick or mist systems do not furnish adequate cooling.

The wheel must not be crowded. Infeed and traverse should be at a rate that the wheel can take and still hold itself cut-free.

The wheel must be cleaned with a dressing stick often enough to keep it open and free cutting.

Less Gum—Thin oil is preferred to soluble oil and water as the coolant for chipbreaker grinding for two reasons. First, it keeps the wheel face clean and therefore free cutting, while soluble oil tends to gum and load the wheel face.

Second, thin oils have a slower heat transfer rate than soluable oil and water mixtures and do not tend to quench and heat shock the carbide.

Two Ways — One method of grinding a chipbreaker is to position the tool in an adjustable vise below the diamond wheel and feed the wheel down into the cut in 0.0005-inch increments. Table traverse is fairly rapid. To cut a chipbreaker 0.020-inch deep requires about 40 passes.

Another satisfactory method for use with diamond wheels is to grind the entire chipbreaker at a single pass. The tool is properly positioned in the vise and the wheel is fed down the full depth of cut before it is brought into contact with the tool.

Light Touch—The table is then slowly traversed under the wheel with fingertip pressure. Since only one pass is taken, total time is not increased. Both resinoid and metal-bonded diamond wheels have been successfully used with this method.

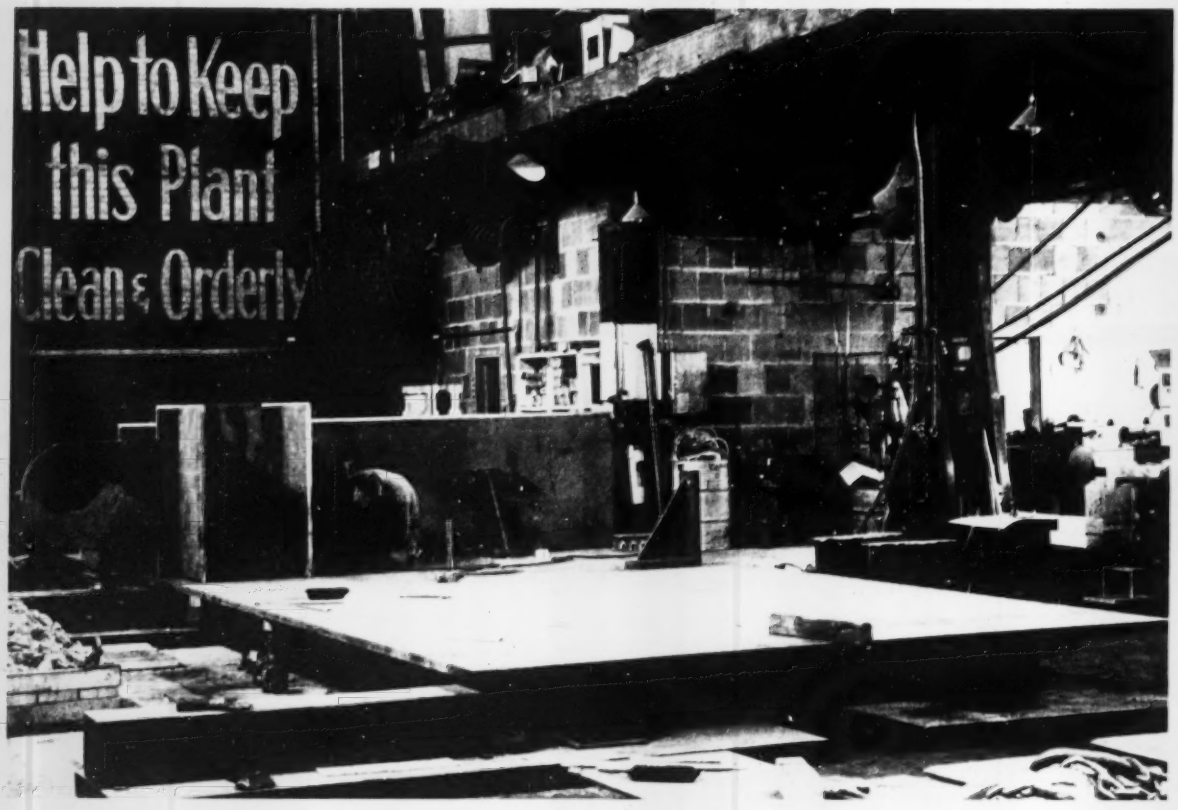
Special precautions must be observed when using this method. Since the wheel is in continuous contact with the tool for an extended time, considerable friction results and heat is generated. A pump coolant system must be used, supplying a generous stream into the cut.

From Three Sides — Good arrangement for supplying the coolant is shown in the illustration. One nozzle supplies coolant behind the wheel and a nozzle is located on each side. Splash guards must be used and direction of wheel rotation at the point of contact should be the same as that in conventional milling that is up and away from the work.

Because the wheel contacts the work only once and is not forced through the cut, wheel life is greatly increased, corner-holding ability of the wheel is improved and production rates are maintained.

Heavy Feed — Silicon carbide resinoid wheels are used to a limited extent for chipbreaker grinding. They're applied where it is not essential to hold a sharp corner in the bottom of the chipbreaker groove.

When using silicon carbide resinoid wheels for grinding chip-breakers it is essential that fairly heavy downfeeds of 0.003-inch to 0.005-inch be employed. The wheel should not be permitted to dwell but should be traversed across the work at approximately 30 fpm.



Web plates whose edges have been scarfed before assembly are tack welded together, to skin plate before permanent joining by manual hidden arc method

Manual Hidden Arc Lowers Fabricating Time

Lays down bead four to five times as fast as hand arc welding methods. Welds with deep penetration and little stress are achieved on these control gates for dams

By JAMES QUIGLEY
District Engineer
Lincoln Electric Co.
Cleveland

FABRICATION of dam gates and accessory equipment for control of water flow is largely an arc welding operation at Phillips & Davies Mfg. Co., Kenton, O. They save an estimated 500 manhours on a single job and get better welds by keeping hand arc welding to a minimum and using manual hidden arc methods.

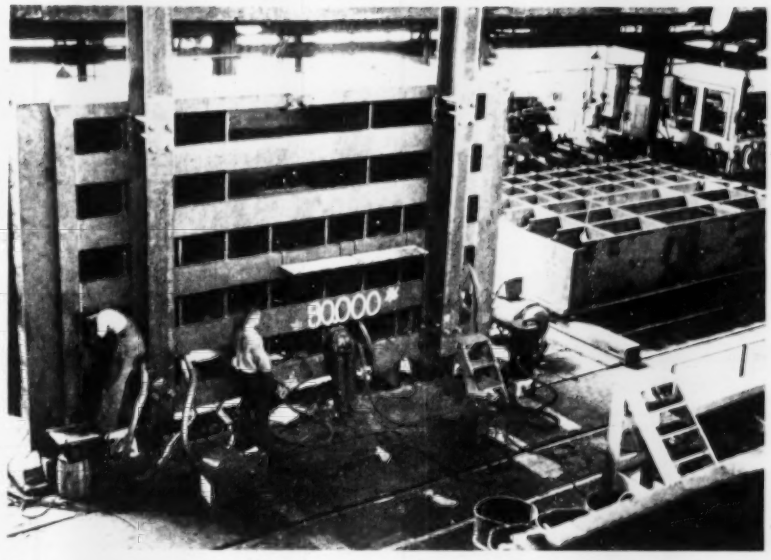
Fully automatic arc welding has not been done by this company because most of the weldments are of unusually large size and cannot well be moved to a fixed machine. With manual hidden arc welding, however, it is a simple matter to bring the welding gun into favorable position for nearly all welds save those that must be made in vertical, overhead or other positions where the granular flux cannot be kept in place to cover and hide the arc.

Deep Arc Penetration—Phillips & Davies estimate that fully 65 per cent of the total welding on structures is done by semiautomatic equipment. Electrode wire as well as flux are fed automatically but the gun is moved by hand. The high current (up to 600 amp) carried by the 5/64-inch electrode wire results in a high current density which produces a deeply penetrating arc.

Even when so called egg crate (cellular) structures such as are shown in the photos are employed, a large part of the welding is of this type and relatively few shifts of the assembly (and these of a type readily made with an overhead crane) are needed.

No Masks — With hidden arc welding there is much less smoke than when coated rod is used in hand welding and operators do not have to wear masks. This makes for convenience, and safety is promoted because the operator can see everything but the arc itself, which is hidden by the flux and need not be seen.

Standard welding guns are normally used with a cone about 14 inches long for holding and feeding flux but, where webs come close together or other confined conditions make it impossible to



Gate structures are lifted from horizontal to vertical position to ease welding job during fabrication. This cuts need for overhead welding to minimum

With the manual hidden arc method, the operator needs neither mask nor gloves. Flux powder shields the arc and only a small portion is fused

use the regular cone, a much shorter one is applied. With it welding is done in close quarters and the cone merely has to be filled more often than a larger one. In general welds in confined spaces are short anyway and a small cone holds enough flux to complete most such welds.

Start with Skin Plate—In the photos are shown major components of the emergency gate in process of fabrication for the Garrison dam. This gate is made in two halves that weigh about 88,000 pounds each. Skin plates for these halves are $1\frac{3}{4}$ inches thick, measure about 13 x 21 feet and weigh about 19,500 pounds apiece.

As the skin plate is subjected to heavy pressure, it has to be stiffened to resist deflection. Major stiffening elements are webs set at right angles to plate in cellular arrangement and heavy flange bars 3 inches thick and 12 inches wide. These latter are welded across the outer edges of the webs after other welds joining the web plates are completed.

Structure Is Lighter — Such a structure, although having a great total weight, is lighter than if reinforced by structural shapes, partly because no angles have to be applied and riveted at joints, webs are relatively thin and the metal can be disposed to best advantage for stiffness and for resisting the stresses imposed in service.

Fabrication starts with the skin plate set in horizontal position. These plates, which are mostly $1\frac{1}{4}$-inch thick, have edges previously scarfed to provide V-grooves at joints to be filled with weld metal.

Welding Procedure—Tack welded cellular structure is permanently welded and framework is then added around the contour; heavy stiffening flange bars are applied across the back edges of the webs that form the cellular structure.

Many joints are welded with the operator having part of his body inside the cells so that he can reach the weld areas. When working at high levels, scaffold boards are used. They are supported by forged brackets made to hook over the heavy bars and can be seen in the photo.

Fillets and Flux—Many of the welds are made with $\frac{1}{2}$-inch fillets but fillets of $\frac{3}{4}$, 1, $1\frac{1}{2}$ and $1\frac{3}{4}$-inch sizes are readily produced where specified as they are on the gates here pictured. Often more than one pass is needed to deposit the required amount of metal in making the welds but within limits, the size of fillet for a single pass can be varied by moving the gun at slower or faster speed.

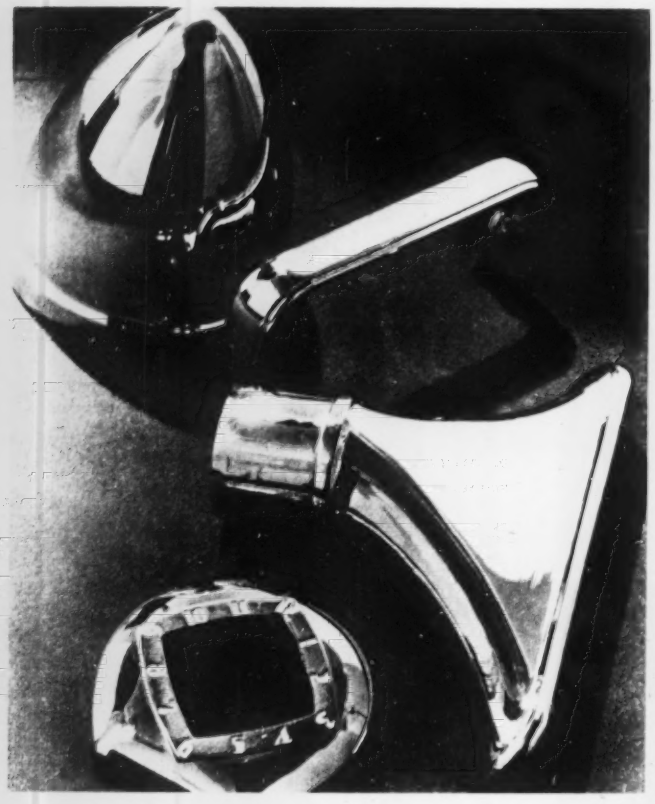
As welding proceeds, granular flux is deposited from the cone and completely covers the arc. Only the flux next to the weld is fused into slag, the remainder being picked up by suction hose, sifted and reused. Fused flux is very easily chipped or wire brushed off the weld or loosens itself in cooling.

Standard welding guns hold as much flux as is needed for welds as long as they are normally made without a stop but refilling is quickly done and welds can be continued to any length without detriment.

Weld Stresses Nil—All welding results in setting up some stresses in the weldment, but, with the hidden arc process the flux slows cooling and in many cases the stresses are of little or no consequence. If specified, however, weldments are put through stress relief furnaces before being passed for delivery.

Squirt welding has been so satisfactory and yields so great a saving in the experience of this company that it is now used in preference to hand welding wherever arc welds are needed and can be made in positions favorable for the semiautomatic equipment required.

You Can do a Better Job . . .



These aluminum parts have been given a bright copper-nickel-chromium plated finish using alkaline zincate-dip pretreatment

Plating on Aluminum

Zincate immersion pretreatment is most practical and economical method for plating on aluminum. Recent studies show how to smooth-out production line difficulties and improve corrosion resistance of plated products

LOOKING for ways to improve plated finishes on aluminum?

Then check up on your surface conditioning treatment. By exercising a few precautions service performance can be improved.

To produce the most corrosion resistant electroplates on aluminum, using the zinc immersion pretreatment, it is necessary to obtain good coverage with the thinnest possible zinc film. This recommendation is based on tests conducted by W. G. Zelley, Aluminum Research Laboratories, details of which were given at the Montreal meeting of the Electrochemical Society.

Zinc immersion procedure is now considered the most practical and economical method for plating on aluminum. It requires less time and equipment, and is less critical to control than other methods. Good commercial plating on aluminum based on the zinc-dip treatment is an everyday practice.

Broad Objective — Research at Aluminum Co. laboratories has been aimed at casting light on the mechanism of the process in the interest of increasing the corrosion resistance of plated aluminum products.

The zinc immersion process involves the galvanic deposition of a layer of zinc on the aluminum part to be plated. This zinc film between the aluminum and the electroplate is the root of a specific corrosion problem. In many environments zinc is anodic to aluminum; consequently, it tends to protect both the aluminum and the electrodeposit.

For a Better Job—Consideration of the mechanism of this corrosion process led to certain conclusions on the performance of plated aluminum parts. The thinnest practicable zinc film gives the best corrosion results. Aluminum alloys with the lowest solution potentials result in the most resistant plated products. Lower potential difference between base metal and electrodeposit makes 24S alloy better than 2S.

So far as corrosion itself is concerned, large breaks in the plated coating are less harmful than small. This is because small breaks furnish a correspondingly small anode area to protect the deposit. Result: Attack is more rapid; blistering and lifting occur earlier. For this reason bright plating baths should be operated carefully to avoid stress cracks in the plate.

Another important point: Any modification of the immersion deposit that tends to decrease the rate of solution of zinc by the anodic reaction will be beneficial.

Here's the Key—One of the rea-

sons that zinc has been so successfully used for immersion deposits on aluminum, as a pretreatment for plating, is its proximity to aluminum in the electromotive series of metals. The relative order of the two metals is interchangeable depending on the environment.

Potential difference between zinc and aluminum, in a given immersion bath, determines to a large extent the weight and character of the zinc deposited. Since the zinc film is so important in the corrosion resistance of electroplated aluminum, this potential difference becomes a significant property.

Getting Ready to Plate—When a properly cleaned aluminum part is immersed in a sodium zincate solution, the thin oxide film on the surface is first dissolved. Just as soon as the underlying aluminum has been exposed, it also starts to dissolve and is immediately replaced by the equivalent weight of zinc. When the aluminum surface is completely covered with a thin layer of metallic zinc, action in the solution virtually stops. Most of the action takes place during the first few seconds of the immersion period, which is usually from one-half to two minutes in duration.

Resulting zinc coating is uniform in appearance and adherent to the aluminum surface. After rinsing the zinc-dip solution from the aluminum part, it is plated in a copper strike bath. Other metals may be plated over copper in the conventional manner, or applied directly to the zincate treated surface if suitable precautions are taken.

Most of the zincate-dip baths in plant use today have this basic composition: 400-500 g/l of caustic soda plus 80-100 g/l zinc oxide.

Make It Better—Researchers at Alcoa found certain benefits result from the addition of a small amount of ferric chloride to this bath, plus some tartrate to maintain the iron in solution under the strong alkaline conditions. Tests show that this slight modification improves electroplating coverage on all aluminum alloys. The resistance to corrosion of aluminum plated with this type of film is improved for most of the alloys, exceptions being 24S and 75S. Improvement in corrosion properties is possibly a function of the percentage of the metallic zinc in the modified film.

Modified zincate-dip also helps smooth out difficulties in plating on aluminum alloys containing magnesium where the so-called double immersion treatment is sometimes used. This involves a double dip in the zinc immersion solution, the first zinc deposit being removed by nitric acid. The double immersion procedure using this modified solution has improved plating of aluminum die castings to the extent that items on which the standard techniques have failed are now successfully finished.

Not Critical—Usually 1 to 2 g/l of ferric chloride crystals are added with about 10 grams of Rochelle salt per gram of ferric chloride to maintain the iron in solution. A large excess of ferric chloride is to be avoided, since too much may cause blistering of deposits.

When plating on aluminum alloys of high magnesium content it is advisable to increase the Rochelle salt content of the bath to 100 g/l. The modified solution is prepared by dissolving zinc oxide in the concentrated caustic solution in the usual manner, then adding the iron as a water solution of ferric chloride and Rochelle salt.

Saves Solution Zincate-dip baths due to the high concentration of ingredients are highly viscous. In production operations this has two disadvantages: High drag-out on parts and rinsing difficulty. Such characteristics bring on problems, especially in the use of automatic equipment. Aluminum Co workers are investigating more dilute, less viscous, zincate-dip baths.

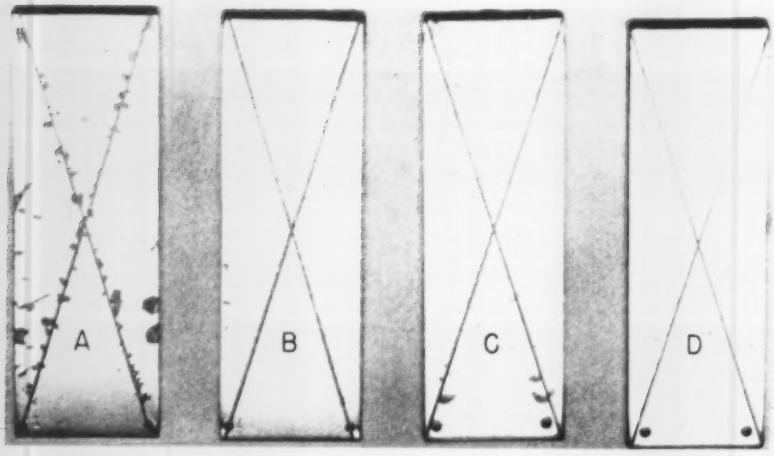
Keep in mind this fact: In any sodium zincate solution there is a minimum amount of sodium hydroxide necessary for given quantity of zinc oxide. This sodium hydroxide content, which is in excess of the amount theoretically required to react with the zinc oxide, is necessary to prevent precipitation of zinc hydroxide. The more dilute the solution the greater must be the ratio of sodium hydroxide to zinc oxide.

Additions Change Potential — More dilute baths may be used in the dip pretreatment if suitable additions are made to adjust the potential difference between zinc and the aluminum surface. This is necessary to hold down the weight of the immersion zinc deposit which tends to increase appreciably upon dilution of the dip solution.

Sodium nitrate and Rochelle salt seem to do the trick. Suitable sodium nitrate additions are of the order of 0.5 to 1.0 gram per liter, which reduce the coating weight by 30 to 50 per cent. An excess must be avoided. For example, 2 g/l of sodium nitrate may give a zinc film with a contact resistance too high for good coverage by subsequent plating.

Rochelle salt aids in conditioning magnesium and magnesium silicide

Enthone's Alumon process was used for barrel plating these small aluminum parts to give brass and regular bright nickel finishes



Modified immersion compared with regular after 300 hours salt spray test
A regular, B modified, bright nickel; C regular, D modified Watts nickel

type alloys as well as in providing low coating weight. Likewise, dilute baths may be modified with iron addition using ferric chloride in the same manner as for the concentrated baths. This markedly improves the resistance to corrosion except on 24S and 75S alloys.

Preferred One—The most practical dilute type immersion bath has a basic composition of 120 g/l of caustic soda and 20 g/l of zinc oxide with the "potential regulating" additions. Another possibility is a bath with 50 g/l caustic soda and 5 g/l zinc oxide. The first bath is preferred because it provides a greater reserve of zinc. The more dilute solution results in only a relatively small increase in rinsing and drag-out properties over the 120 g/l caustic bath.

MODIFIED ZINCATE-DIP FOR PLATING ON ALUMINUM

Caustic soda	500 g/l
Zinc oxide	20 g/l
Ferric chloride	1 g/l
Rochelle salt	10 g/l

DILUTE TYPE ZINCATE-DIP FOR PLATING ON ALUMINUM

Caustic soda	120 g/l
Zinc oxide	20 g/l
Rochelle salt	50 g/l
Ferric chloride	2 g/l
Sodium nitrate	1 g/l

More Care Needed—Surface preparation should be especially thorough when employing the dilute type immersion solution. Stick to the more effective conditioning treatments; the double immersion technique gives particularly good results. Time and temperature control should be more precise. A good rule to follow when using the dilute zincate-dip is to limit the immersion to a maximum of 30 seconds at a temperature of not over 75 F.

Already Worked Out—Enthone's Alumon process is a proprietary dip for preparing aluminum alloys for electroplating based on a modified type of zincate solution. Aluminum parts are cleaned with alkali cleaner, acid treated, then dipped in a solution of Alumon salts at room temperature. These salts remove oxide from the surface of aluminum, activate it, and at the same time deposit a zinc-copper alloy which is adherent to the aluminum and serves as a base for electroplating.

Actual adhesive bonds formed between the electrodeposited metal and the base aluminum approach the rupture strength of the aluminum itself, when this method is used for surface preparation. The cost of plating on aluminum is not significantly different from the cost of plating on steel or copper alloys. For example, the Alumon solution costs a little more than $1 a gallon when made up, but each gallon will treat more than 300 sq ft of surface area.

Comes First—To secure the best results with the zincate-dip process for plating it is essential that surface conditioning treatments be used to give a suitable clean and uniformly active surface for deposition of zinc.

The cleaning and conditioning treatments that are necessary for aluminum have a three fold purpose: 1. Removal of oil, grease, dirt and other contamination so that the surface will respond to etching treatments. 2. Removal of the natural oxide film, replacing it with a thinner, more uniform and suitable film. 3. Removal of certain microconstituents on the alloy surface which may subsequently react during the plating operation.

What to Expect—Interest in plated finishes on high strength aluminum parts has resulted in accumulation of considerable information on decorative chrome plated 24S-T4 alloy. Alcoa reports that this is a most favorable alloy for plating by the zincate dip-method. Excellent corrosion resistance is obtained.

Alloy 24S-T4 automobile bumperettes, with 0.0015-inch nickel plate under the chromium will withstand at least 3 years exposure in an industrial atmosphere without showing any attack of the base metal.

The inherent properties of 24S-T4 alloy gives good results without any special precautions in the zincate-dip bath. Plated 2S alloy also shows no evidence of corrosion of the base metal after 3 years exposure longside the 24S-T4 bumperetts. The 2S parts were plated using a double immersion in a modified bath.

Die Castings Looking Up—Unquestionably, aluminum die castings are more difficult to plate than wrought alloys. One big factor: Greater precentages of copper, silicon, and magnesium usually found in casting alloys.

The modified solution looks particularly promising for plating on die castings. Casting alloys currently under consideration for plated finishes are No. 360, 380 and 218 alloys. Alloy 380 is giving best results in plating at present time. Plated finishes on this alloy should stand up in an industrial atmosphere for a period of at least a year.

After surface of the mock-up has been thoroughly prepared, work commences on female production mold. Five layers of glass mat and glass cloth are each coated with Vibrin resin and squeegeed to remove air bubbles

Work is progressing here on the body itself. Basically the same process used for laying down the mold is repeated in body building. After proper thickness build-up, the body is cured on the mold before removal

Plastic-Bodied Cars Hit the Roads

There won't be many outside of the sport car set for quite a while, but from small-shop techniques may come the solution to quantity production problems

DETROIT'S interest in plastic bodies, revived with the new burst of sports car production soon to come off the lines, is causing more than one driver to wonder if he'll soon be able to buy his favorite standard model built of the same material. Experts predict he'll have a wait because the plastics pose some mass production problems.

Commercial production of low cost plastic automobile bodies is underway as a joint project of Glasspar Co., Costa Mesa, Calif., and Naugatuck Chemical Division, U. S. Rubber Co. who are making sports car bodies to be mounted on 100-inch wheelbase frames. Dent-proof and rust-proof, the body is made from glass fibers and Vibrin polyester plastics.

"While the plastic body is not yet ready for production on a mass scale for the motoring public, it has one big advantage which is attractive to the automotive manufacturer: It can be formed and shaped without the use of extremely expensive molds and heavy plant equipment," says John P. Coe, general manager of Naugatuck.

Starts With Mock-Up — Initial step in the manufacture of the body is much the same as that taken by conventional manufacturers. Wood and plaster mock-up which acts as a master mold is designed and built. Use of sealer and sanding imparts the necessary smooth finish, and a coat of wax and another of polyvinyl acetate assures that the female mold will break away easily.

Fast curing coat of Vibrin plastic is applied as an overlay to assure a finish free of pinholes and rough spots. Rest of the female mold consists of five layers of glass fiber mat and glass cloth bonded with Vibrin plastic. Layers of mat and cloth are laid up dry, and plastic is applied and squeegeed to remove air bubbles and assure even dispersion.

Cut in Half—While still on the plaster mock-up, steel brackets are attached to the female mold for rigidity and ease of handling, and the mold is cut in half at the driver's seat. Flanges of the same material are attached to the mold where it was cut so that it may be later accurately joined with bolts.

Mold is removed from the mock-up in two halves and each half is

Test car was deliberately driven into a tree at a speed of 25 mph to check the body strength. Inspection showed no dents, only this crack which was caused by the impact

Crack from the impact was repaired in less than an hour by first buffing it smooth and then applying a glass fiber patch along the crack and a coating of the bonding plastic

spot finished to improve surface. After joining with bolts, the female mold is given the same preparation finish that the mockup received and body molding can commence.

Building the Body — Glass mat and glass cloth are laid up over the inside of the mold and a coat of plastic is applied and squeegeed to disperse it thoroughly through the fiber. This combination is then allowed to harden and the process is repeated until the desired thickness, approximately 2 10-inch, is obtained.

The body is allowed to cure in the female mold, portable infra-red lamps being used occasionally to speed up the process. The mold is unbolted and removed in two sections, and the body is then buffed and corners smoothed before the paint is applied.

Strong and Light—Currently the body is available in one design which fits a frame with a 100-inch wheelbase. As production increases, Glasspar expects to make available a variety of body styles to fit frames of various sizes. Present body weighs only 185 pounds.

It will not dent under punishment of accidents which now result in crumpled fenders and doors. Because of its resiliency, the Vibrin-glass combination springs back into its original shape after impact. Breaks are possible under heavy impacts, but the material can be easily and cheaply repaired.

Easily Repaired—For demonstration purposes, the first body produced has been mounted on a custom-built sports car consisting of a special frame and supercharged engine. To test its strength, it was driven deliberately into a tree at a speed of 25 miles per hour.

The test resulted in a crack approximately 14 inches in length at the point of impact on the right side of the car near the windshield. After buffing the cracked area thoroughly, a patch of glass fiber was laid along the crack and coated with plastic. Job was completed in less than an hour.

Promising Future — "When you team up low cost production methods and equipment with desirable strength and wearing qualities, the plastic is a material which cannot be ignored," believes Mr. Coe. "Equipment used by reinforced plastic molders represents an extremely small fraction of the investment cost for metal-fabricating dies and machinery."

Integral color is a distinct possibility with the new material. At present, finished bodies are spray painted in the usual manner with good results, but development work is continuing which will build desired colors into the material.

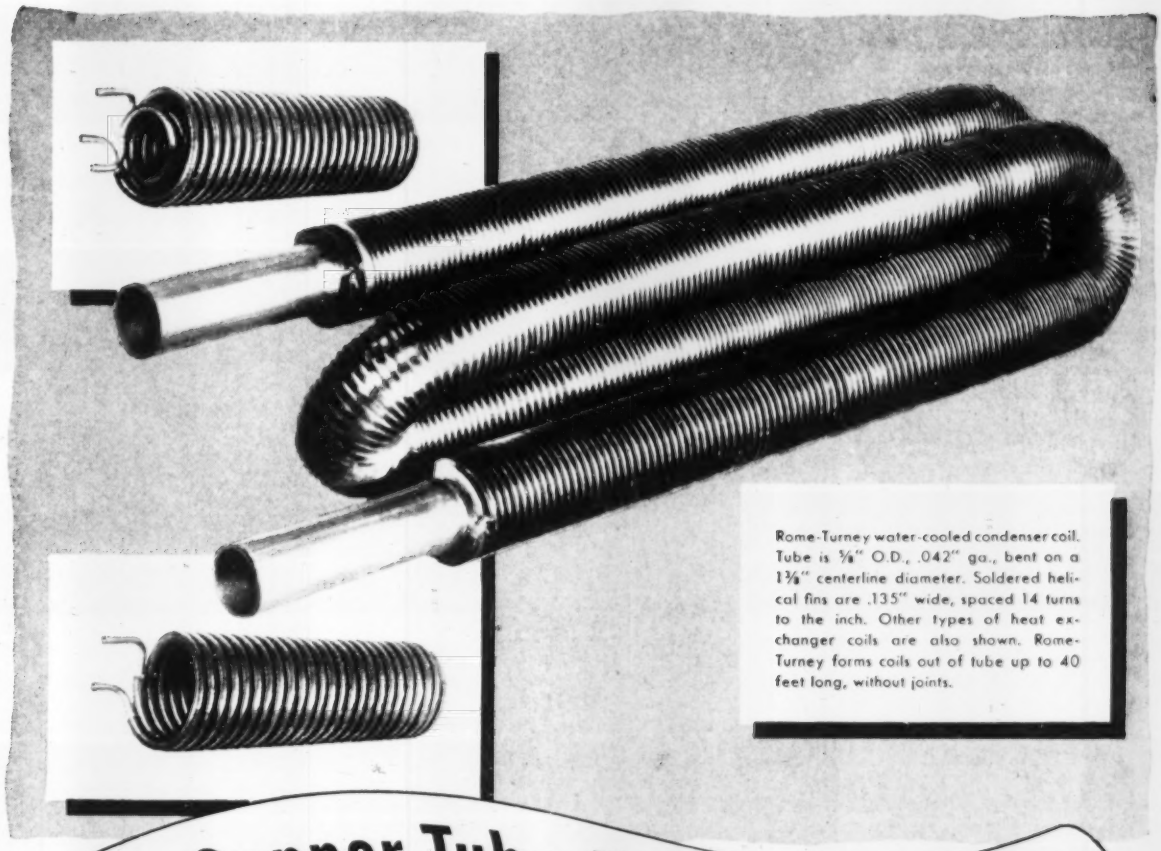
War Baby — The partnership of glass and Vibrin plastic was formed during World War II when they were teamed up for use in aircraft radomes. The combination was strong, dimensionally stable under temperature extremes, resistant to weathering, and, most vital, transparent to the passage of ultra-high frequency radar impulses.

Since the war the combination, which is known as reinforced plastics, has grown in popularity. Today more than 14 million pounds of polyester resin and more than 7 million pounds of glass fiber is being produced.

Clutch Housings: 80 per Hour

Multi-operation machine using the manufacturer's standard boring and drilling units and a 72-inch six-station power indexing table performs five operations on clutch housings at a rate of 80 parts per hour, at 100 per cent efficiency.

Built by Baker Brothers Inc., Toledo, O., the machine has units mounted in horizontal, vertical and angular planes. Automatic operations include drilling, chamfering, boring, counterboring and tapping.



Rome-Turney water-cooled condenser coil. Tube is ⅝" O.D., .042" ga., bent on a 1⅜" centerline diameter. Soldered helical fins are .135" wide, spaced 14 turns to the inch. Other types of heat exchanger coils are also shown. Rome-Turney forms coils out of tube up to 40 feet long, without joints.

For Copper Tube that can be BENT

Rome-Turney sees REVERE

Most of the Revere Metals are fabricated by usual methods into conventional products. Some of them, however, appear on the market in forms that are unusual and possess special advantages. Take these helical-finned copper coils produced by the Rome-Turney Radiator Co., Rome, N. Y. It takes extra skill to produce coils with such small radii. The company can produce the coils shown on a commercial basis, for use in air conditioning apparatus, air compressors, and general heating and cooling applications where compactness plus high heat transfer rates are essential.

How it is possible to make such tight turns is Rome-Turney's secret. Revere does not share in it, nor does Revere want to reveal a secret of its own, which is how we turn out copper tube in a special bending temper for an application such as this. All we can say is that the two methods dovetail very nicely. If you need copper tube that can be bent easily, and offers you as well the advantages of corrosion resistance, high heat transfer, easy joinings, see Revere. We also make copper pipe, tube in copper alloys, aluminum alloys, and electric welded steel tube. If required, the Technical Advisory Service will gladly collaborate with you, as it has with Rome-Turney, on selection and specification matters. Get in touch with the nearest Revere Sales Office.

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COPPER AND BRASS INCORPORATED

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• • •

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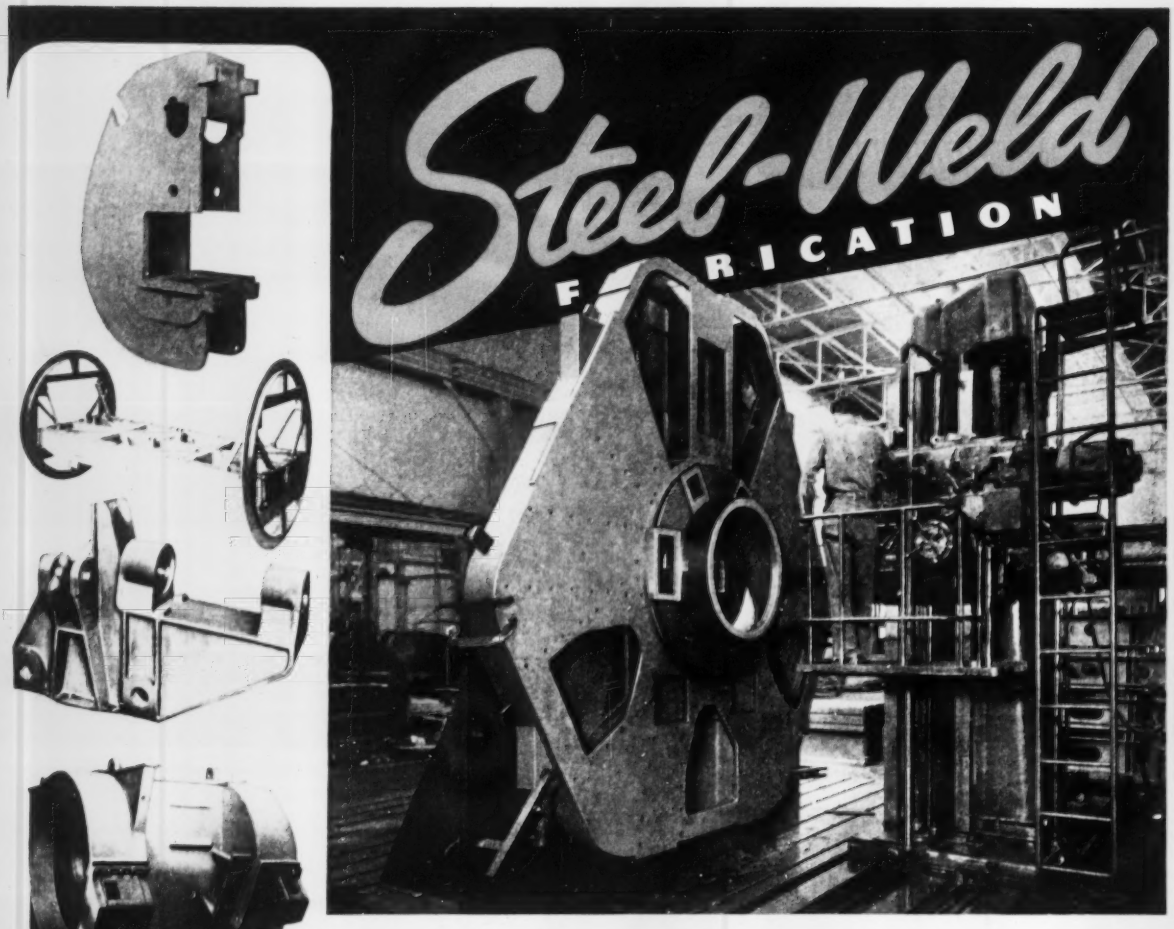

Above is another excellent example of Mahon versatility in the production of Steel-Weld Fabricated units for many industries. This base, undergoing machining operations, was produced for a TV picture tube manufacturer in the glass Industry... it is typical of thousands of Steel-Weld Fabricated parts and assemblies produced and machined by the Mahon Company for manufacturers throughout the country. If parts or assemblies in your product could be redesigned and produced to better advantage through Steel-Weld Fabrication, or, if you are faced with a limited production of a product involving heavy pieces in which pattern costs are a consideration, you can turn to Mahon with complete confidence. You will find in the Mahon organization a unique source with complete, modern fabricating, machining and handling equipment to cope with any type of work regardless of size or weight . . . a source where skillful designing and advanced fabricating technique are supplemented by craftsmanship which assures you a smoother, finer appearing job, embodying every advantage of Steel-Weld Fabrication.

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Engineers and Fabricators of Steel in Any Form for Any Purpose

MAHON

SIMULATING TRUCK ROAD CONDITIONS
. . . three dynamometers supply the stress and strain

Axle Tester Provides Laboratory Proving Ground

AXLE-TESTING machine capable of simulating actual driving conditions experienced by a truck weighing 80,000 pounds and traveling 60 mph was installed recently at Timken-Detroit Axle Co.'s Alden Indoor Proving ground, Detroit. The equipment, engineered and built by General Electric Co., duplicates torques, stresses and speeds the truck or bus drive axle would meet under both normal and strenuous loads.

A 350-hp dynamometer simulates the truck engine driving an axle through transmission gears. It can deliver up to 450 hp over a driveshaft speed range of 400 to 3000 rpm. Integral blowers provided for cooling allow motoring speeds down to creep.

Controlled Highways—Two 550-hp output dynamometers, 650 to 3000 rpm, are attached to gears located at the axle ends and record torque output by means of strip chart recorders. Combined measurements of the three dynamometers test axle efficiency. Gears are located at axle ends and allow wide speed and load variation.

For test purposes, highway conditions are controlled by magnetic tape. This tape, when run through the automatic cycling equipment, causes dynamometers to respond to impulses and exert indicated speeds and stresses. Tape recorder provides repetition of the operator's speed and torque signals used in an initial manual test.

Permanent Record—As each stress is imposed, instruments indicate continuously the speed, torque or load, providing a permanent record. The same test can be repeated many times until axle durability or life expectancy is established, or the recording tape can be filed and the test repeated exactly at any later date. Since its installation, the tester has been used for life tests, endurance runs and shock-loading tests, but others are under development.

Safety measures offer protection to both operating personnel and equipment. These include overload and overspeed devices, and dead-front enclosed floor-mounted cubicles for all control.

AIME Meets 175th Time

Opening address at the American Institute of Mining and Metallurgical Engineers convention in Los Angeles Feb. 16-19 is being delivered by Gov. Dan Thornton, Colorado. This marks the beginning of the 175th annual meeting of the institute.

Four days of intensive technical sessions and symposiums which cover many significant aspects of mining, metallurgy and petroleum are fitted into the program. Geochemical Methods of Exploration; Crushing and Grinding; Solid-Fuel Separation; and New Methods of Mining are among the highlights of the various technical sessions.

Extra effort was made this year to encourage student participation in the four-day meeting. They were registered free, could attend all sessions, receive technical papers and attend the opening luncheon free of charge.

Transistor Research Aid

RADIOACTIVE methods are accelerating research of semiconductor materials, used in transistors according to Dr. George H. Morrison, Sylvania Electric Products Co., Bayside, N. Y.

Dr. Morrison reports that now it is possible to measure impurities of one part in 100 million by radioactivity methods in germanium. Conventional chemical measuring methods are ineffective at these extremely low concentrations, he says.

Electrical properties of germanium and other semiconductor materials are greatly dependent on the presence or absence of minute amounts of certain impurities. Material is first purified, then impurities are added in controlled process. In the processing, contamination by impurities in the container material must be evaluated.

Irradiated Containers—The containers, made of the purest available graphite, are irradiated with neutrons in the nuclear reactor at Brookhaven National Laboratories, Brookhaven, L. I., N. Y. Containers are then used in the melting of germanium. The small amounts of radioactive impurities in the container are transferred to the germanium during the melting process.

Amounts transferred can be measured by standard methods of measuring intensity and rate of decay of radioactive emission, using commercially-available instruments.

See how another

AUTOMATIC HOLEWAY GIANT

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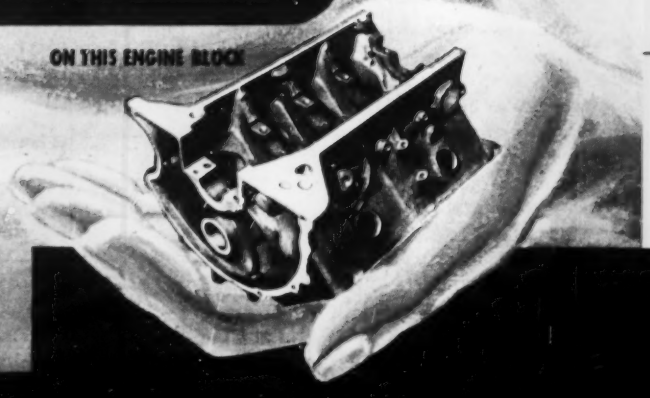
NATCO ENGINEERED
for quality and quantity production

Completes all 55 operations

at the rate of nearly 2 parts per minute

Including milling, drilling, combination core drilling and chamfering, reaming, combination spot facing and chamfering, combination rough counterboring and spot facing, rotating part 180° vibrating for chip removal, and *Inspecting Holes.*



PRODUCES 111 PARTS PER HOUR and inspects its own production

OPERATIONS

STATION #1 Load 1 part

STATION #2

Right Angular Head (17° above horizontal)
- Drill 1 hole #74 to 7/16" diameter part depth.
- Drill 3 holes #73, #75 and #77 to 7/16" diameter part depth.
- Drill 1 hole #76 to 31/32" diameter part depth.

STATION #3

Right Angular Head (17° above horizontal)
- Drill 1 hole #74 to 7/16" diameter additional part depth.
- Drill 3 holes #73, #75 and #77 to 7/16" additional part depth.
- Drill 1 hole #76 to 7/16" diameter additional part depth.

STATION #4 Idle

STATION #5

Left Angular Head (45° above horizontal)
- Combination core drill and chamfer 2 holes #80 and #81 1.23/32" dia. for 1.750" ream.
- Drill 2 holes #82 and #83 to 3/8" diameter for 7/16" x 14 tap.
- Drill 1 hole #84 to 7/16" dia. through for 1/4 NPSF Thread.

Right Angular Head (45° above horizontal)
- Combination core drill and chamfer 2 holes #85 and #86 to 1.23/32" dia. for 1.750" ream.
- Drill 2 holes #87 and #88 to 3/8" diameter for 7/16" x 14 tap.

STATION #6

Left Angular Head (45° above horizontal)
- Ream 2 holes #80 and #81 to 1.750" diameter. Combination spot face and chamfer 2 holes #82 and #83 to size.

Right Angular Head (45° above horizontal)
- Ream 2 holes #85 and #86 to 1.750" diameter. Combination spot face and chamfer 2 holes #87 and #88 to size.

STATION #7 Idle

STATION #8

Left Angular Head (angle off vertical)
- Drill 1 hole #34 to 1/4" diameter 1/2 depth.

Right Angular Head (17° above horizontal)
- Combination rough counterbore for 4.94" finish diameter and spot face 1.15/16" dia. bolt boss #76.

STATION #9

Left Angular Head (angle off vertical)
- Drill 1 hole #34 to 1/4" diameter through.

Right Angular Head (17° above horizontal)
- Finish counterbore 1 hole #76 to 4.94" diameter.

STATION #10 Idle

STATION #11

Right Angular Head (17° above horizontal)
- Drill 4 holes #73, #74, #75 and #77 to 11/32" diameter additional part depth.
- Drill 1 hole #76 to 11/32" diameter additional part depth.
- Drill 1 hole #78 to 11/16" diameter .24" deep.

STATION #12

Right Angular Head (17° above horizontal)
- Drill 4 holes #73, #74, #75 and #77 to 11/32" diameter additional part depth.
- Drill 1 hole #76 to 11/32" diameter additional part depth.
- Drill 1 hole #78 to 9/16" diameter .46" depth.

STATION #13 Idle

STATION #14

Right Angular Head (17° above horizontal)
- Drill 4 holes #73, #74, #75 and #77 to 11/32" diameter to depth.
- Drill 1 hole #76 to 11/32" diameter to depth.

STATION #15

Right Vertical Head
- Mill 4" dia. seat around hole for oil breather tube.

STATION #16 Idle

STATION #17

Rotate part 180°, vibrate while rotating from pan face up to pan face down front end leading.

STATION #18

Left Side (17° below horizontal)
- Inspect holes to be tapped for drill through and depth 5 holes #73 to #77 incl. (45° below horizontal)
- Inspect holes to be tapped for drill through and depth—2 holes #87 and #88.

Right Side (45° below horizontal)
- Inspect holes to be tapped for drill through and depth 3 holes #82, #83 and #84.

STATION #19 Unload

Oil pan face down front end leading.

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to help you solve your problems in Drilling, Boring, Facing and Tapping.

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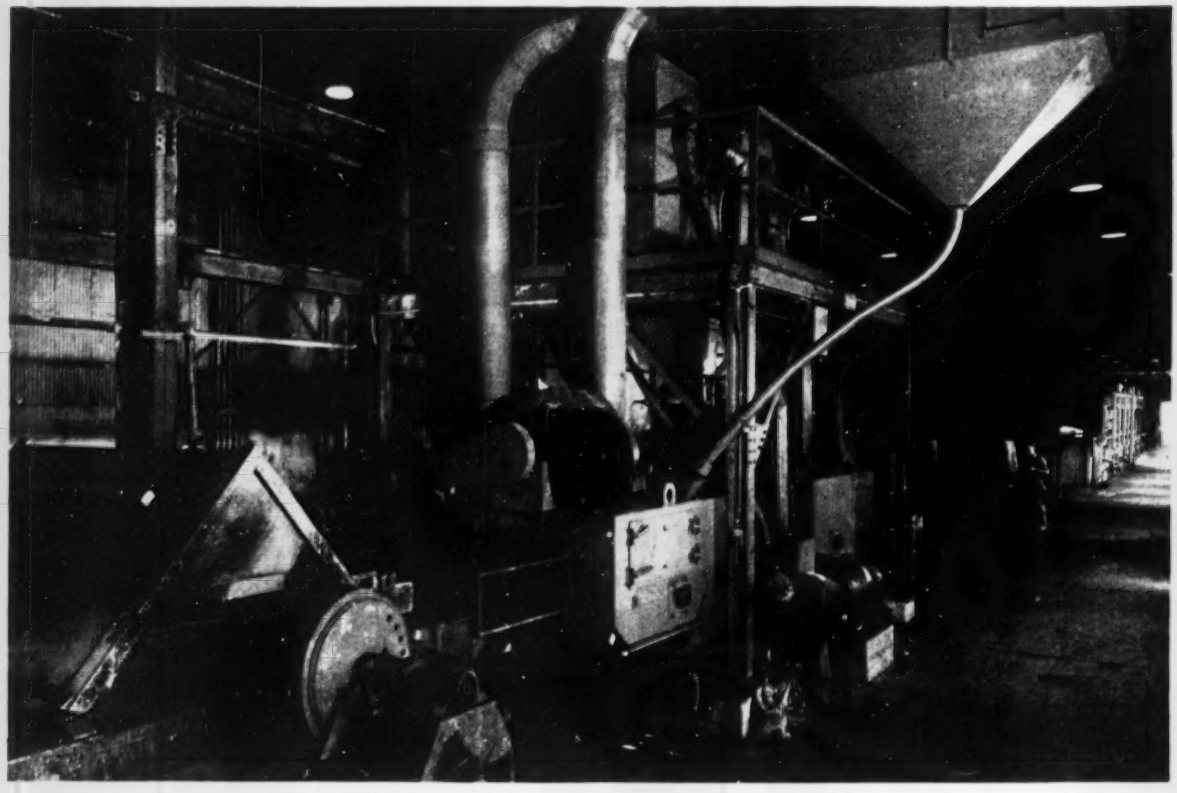

Wheelabrator cleaning cabinet in center foreground is part of the annealing and pickling line itself. Workman is preparing to add shot powder to the closed circuit, replacing the spent shot that is drawn off with scale dust

Shot BLASTS 430 Cleaning Costs

Washington Steel Corp. puts shot blast cleaner on annealing and pickling line and reports better quality strip. They're saving time and getting more uniform product, too

FIRST COLD MILL in the country to take 36¾-inch coils of type 430 straight chrome stainless steel from hot mill to cold mill without scale breaking is attracting attention of most stainless producers. They're watching closely the operation of a shot-blast cleaning unit installed in the strand annealing and pickling line at Washington Steel Corp., Washington, Pa.

Prior to March 1952, Washington bought annealed and pickled coils of 430 for cold rolling and finishing. It was then that they installed a shot-blast mechanical cleaner designed and built by American Wheelabrator & Equipment Corp., Mishawaka, Ind. The new cleaner, according to T. S. Fitch, Washington's president, makes short work of the heavy scale with none of the rolled-in scale, coil digs, slivers, etc. so common to cold-roll methods of scale breaking.

What It Is—Cleaning cabinet itself is a box-like structure, 24 x 12 feet, through which the strip moves after traveling through the annealing furnace and cooling sprays. Four wheel units, each turned by a 20 hp motor mounted outside the cabinet, blast the strip with S-110 steel shot. Two of the wheels are below the strip and two above.

Speed of the strip through the annealer (about 7½ fpm for 430) determines the blasting speed of the cleaner and the quantity of shot that is fed to the wheels. A solenoid valve whose action is controlled by pushbutton feeds automatically the proper amount of shot predetermined for thorough cleaning.

Shot Reused—Shot is in a semi-closed circuit; from a collection hopper in the base of the cabinet it is conveyed by elevator to gravity-feed hoppers above which are a part of the abrasive air washer

42 FURNACES OVER A MILLION TONS...

and still going strong with

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TRADE-MARK

BLAST FURNACE LININGS

Of these 42 "National" carbon-lined blast furnaces, 13 original linings have produced from 1 to 1½ million tons; 18 from 1½ to 2 millions; 10 have produced between 2 and 2½ millions; and 1 lining has topped the 2½ million ton mark. Every year more "National" carbon goes in . . . *stays* in to produce record tonnages, record low cost and *smooth* operation. More and more, it pays to watch the growth of CARBON in modern steel-making equipment.

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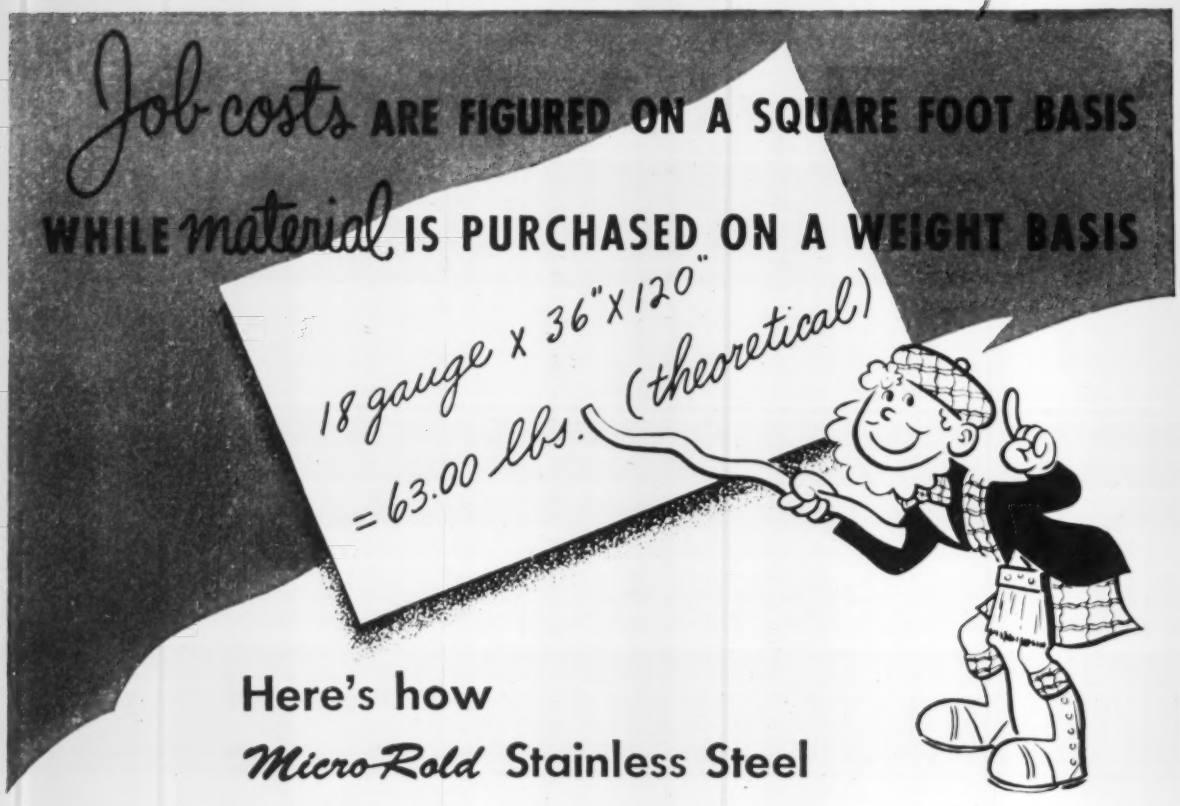

Job costs ARE FIGURED ON A SQUARE FOOT BASIS
WHILE material IS PURCHASED ON A WEIGHT BASIS
18 gauge x 36"x120"
=63.00 lbs. (theoretical)

Here's how *MicroRold* Stainless Steel SAVES you money

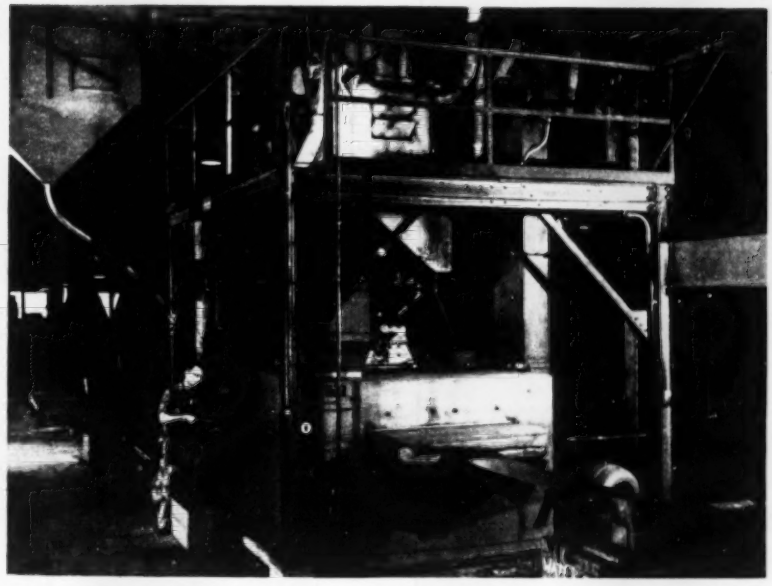
In the use of stainless steel, the selection of gauge number is usually determined by the minimum permissible thickness having sufficient strength to meet the requirements of the application. When you receive material on the heavy side of the gauge you are paying a premium for stainless surface area.

When sheets are ordered by gauge number, the permissible A. I. S. I. variation in thickness is plus or minus 10%. Thus, if you order 18 gauge, you may receive sheets .052" thick, when a thickness of .0475" would suit your purpose. Using a standard 18 gauge 36" x 120" sheet as an example, the theoretical weight is 63.00 pounds, but this weight could permissibly vary between 59.22 pounds and 65.52 pounds. Each .001" of thickness adds 1.26 pounds per sheet.

MicroRold sheets may be ordered by gauge number and you can specify they be rolled on the light side of the gauge range. This is true because the equipment is such that more accurate control of thickness is possible.

If you are not a user of MicroRold sheet it will pay you to get the full details. Your steel warehouse distributor will gladly tell you the MicroRold story.

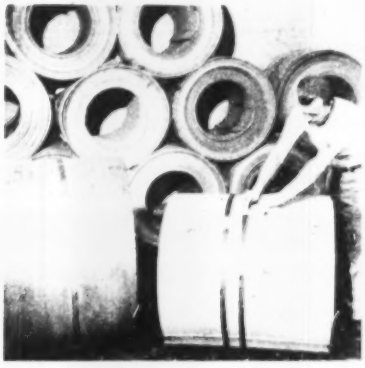
Washington Steel CORPORATION
WASHINGTON, PENNSYLVANIA



Gravity bins and the tubes feeding two of the four impeller wheels are shown above the cleaning cabinet. Bin at top left catches any usable shot that may be in the scale dust and returns it to the main shot bin in the cabinet base

or separator. It is then fed to the wheels forming a continuous circulation of usable abrasive. The entire cleaning unit is connected to a cloth bag dust collector which removes all material not taken out by the separator.

Good for 300 Series—While almost 70 per cent of Washington's output is now 430 on which shot blasting works so well, considerable improvement in quality and production of 300 series strip is reported. With the higher annealing speeds possible, the Wheelabrator-equipped line could produce an estimated 175-200 tons per day instead of the 135-150 tons previously possible.



Without usual cold-roll scale removal, the coil of 430 stainless at left becomes clean strip shown at the right, ready for the Sendzimer rolling

Weight loss in the shot blasting is confined almost 100 per cent to the scale itself, the loss of metal being so small as to be insignificant. In the 430 steel, scale accounts for almost 1½ per cent of the strip while in others it is less than 1 per cent.

Process Flows—The entire process begins with the placing of a hot-rolled coil on the uncoiler and welding the end to the trailing end of the preceding coil. Strip feeds through a leveller and then into the annealing furnace. Here the speed of the entire line is set, depending on the thickness and analysis of the steel. Next point is the water spray cooler and then into the shot-blast cleaner whose speed has also been attuned to annealing speed.

From the cleaning unit, the strip passes through mild pickling acid (5 nitric, 2 hydrofluoric) mainly to remove small scale and dust particles from the surface. High pressure water spray rinses both top and bottom surfaces, hot air then dries them, and the strip is coiled. Coils are conveyed to the edge slitters and then to the preparation line where they are inspected and wound on spools of the cold mill.

Sendzimir Cold Rolling—A 400 fpm Sendzimir mill, capable of rolling strip down to 0.0125-inch gage without intermediate annealing or pickling, performs the precision cold rolling operation. After rolling, coils are put on the final annealing and pickling line.

This line, located next to the initial cleaning and annealing line, consists of annealing furnace, electrolytic pickling bath (7 per cent nitric acid), another acid bath (7 nitric, 3 hydrofluoric), a high pressure spray rinse, hot air dryer and coiler. Coils are then taken to the skin mill where a smooth finish is imparted to the strip surface.

Easy on Maintenance—Operation and maintenance of cleaning unit, according to Washington, is easy and infrequent. The four wheels, each 19.5 in diameter and 2.5 inches wide, have replaceable heat treated alloy blades similar to those in turbines. Blade life in excess of 2000 operating hours, is not uncommon.

Cabinet maintenance is no great problem either. Rolls supporting the strip as it passes through are rubber covered and thus resist abrasion. Walls are lined with mild steel scrap plate which can be easily replaced when worn.

Better Job, Quicker—According to Mr. Fitch the blast cleaning unit at Washington, in operation almost a year, is faster, more efficient and does a better job quality-wise. It is seldom necessary to re-run a coil of strip before cold rolling.

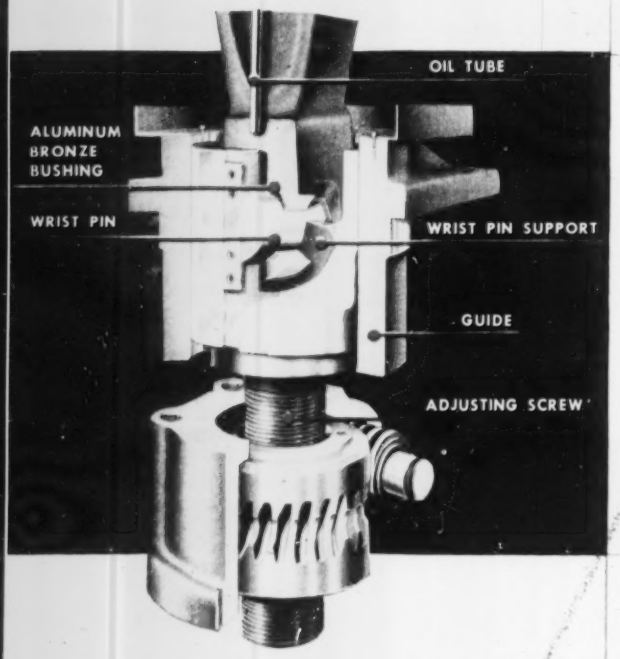
Though blast cleaning units could operate on much faster lines which take only preannealed strip, Washington believes that the advantages to be gained by annealing in the same line outweigh the disadvantage of considerably slower speed. Extra handling and storage of the annealed coils is eliminated.

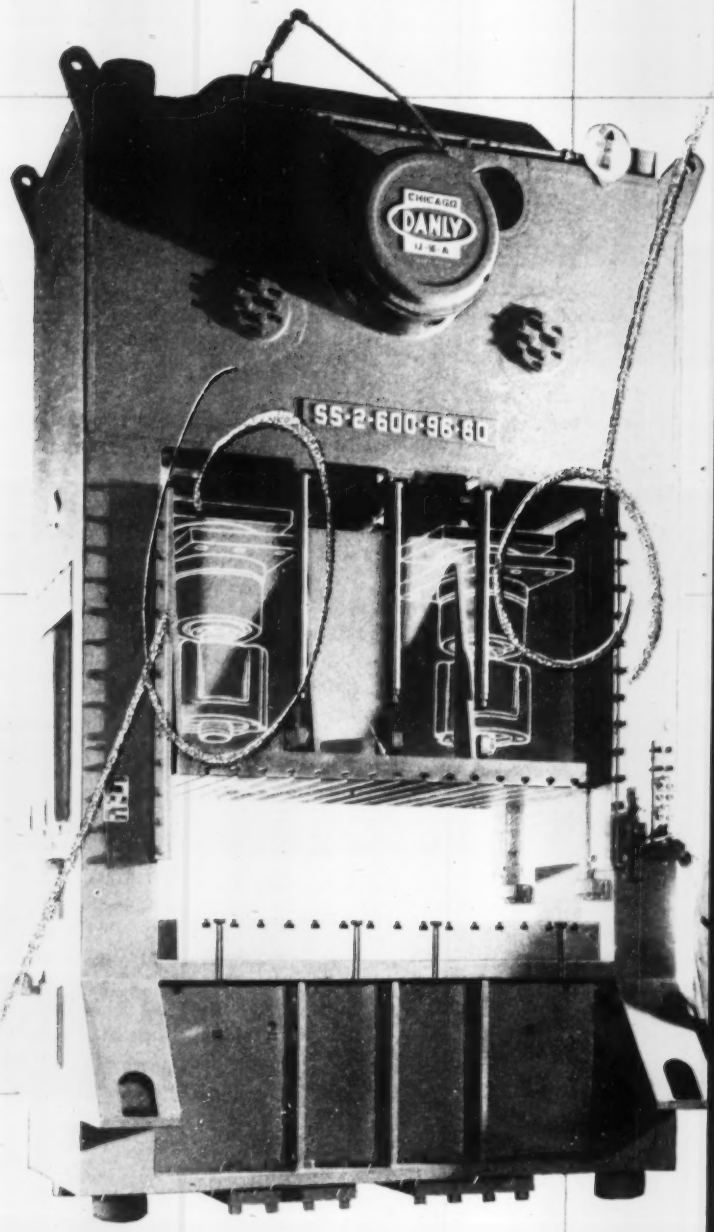
Purchasing Agents Show Grows

Purchasing Agents Association of Chicago is conducting its annual products show at Hotel Sherman, Chicago, Feb. 17-19. About 191 exhibit spaces are provided this year, compared with 150 last year and the show is expected to better the attendance of approximately 26,000 people in 1952.

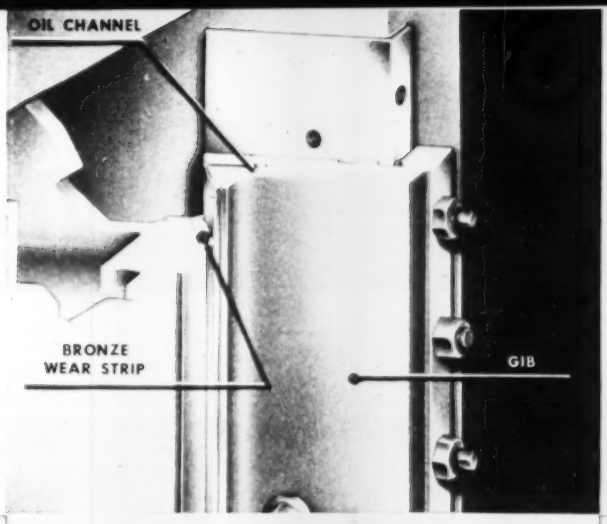
when you buy presses..

Slide Adjustment Mechanism illustrates how Danly design gives intermediate support to heat treated and ground wrist pin, eliminating bending stress under load. Upper assembly is retained within vertical guides permitting the use of extra long adjustments because there is full strength at extended settings. The construction shown, plus automatic *oil* lubrication, makes practicable the use of close machine fits at the wrist pin joint. This is Danly construction.





A Danly 600 ton Single Action, Straight Side Press equipped with automatic *oil* lubrication—including gibs.



Cutaway of Gib Construction shows how *oil* is supplied to gibs. Automatic oil lubrication of the gibs, permitting extremely close alignment of the slide, is standard on most models and available on all Danly presses. Extra long gibs entirely contain slide during working stroke, prolonging die life. This is Danly construction.

take a close look at construction

Extra strength and precision will save you both production time and money. Dies will last longer, stamped parts will meet closer tolerance requirements and press down time will be reduced.

Construction features like those shown here—plus specially engineered controls and the exclusive Danly Cool-Running Clutch—are reasons why industrial leaders throughout the country are choosing . . .

DANLY PRESSES

Danly's complete engineering staff is at your service to help you select the best presses for your job. Write today—and ask for the Danly Straight Side Press Catalog.

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It costs less to run a DANLY PRESS!

Single Action Straight Side | Autofeed | Underdrive Single, Double, Triple Action | Gap Frame | Double Action Straight Side

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MECHANICAL PRESSES . . . 50 TO 3000 TONS
HYDRAULIC METALWORKING EQUIPMENT

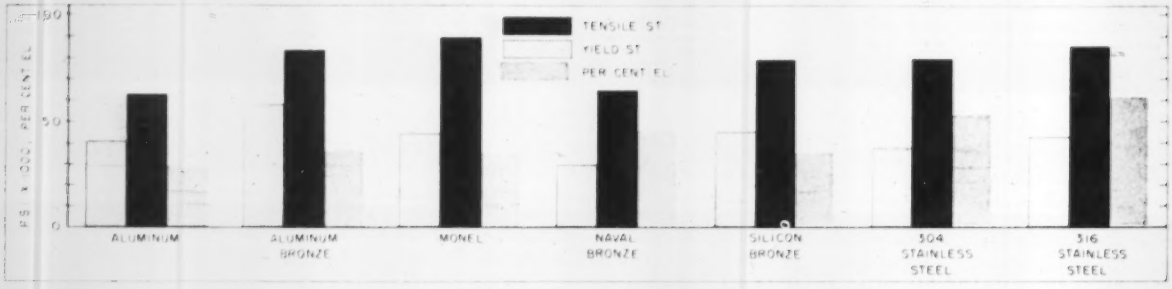


Chart compares physical properties of the all alpha bearing aluminum bronze with other fastener alloys in use

New Bolting Material . . . Good For the Tough Spots

Aluminum bronze of the iron-bearing single-phase type is making a good showing as a new bolting material. It resists corrosion in salt water, alkalies, acids

A 180-degree cold bend on a thread section is necessary for a tough bolting where impact resistance is required

By J. F. KLEMENT
Technical Director
Ampco Metal Inc
Milwaukee

ALUMINUM BRONZE, properly processed, and of the iron bearing single-phase type shows attractive characteristics as a new bolting material.

Need for a better fastener material is always present, whether for salt water, acids or alkaline corrosion applications. Analysis of failures indicate that no one single property can be considered sufficient for a specific application. For example, if the application is for acid conditions, corrosion resistance is but one requirement. Too often strength and toughness, equally important, are overlooked.

Toughness With Strength—For applications involving tensile strength alone, a single-phase or duplex alloy can be used. When the application requires toughness together with strength, single-phase materials are by far the best. Reason: The all-alpha materials in the copper base alloys possess the toughest characteristics when processed properly.

To obtain maximum toughness, a material should have a good yield strength, a high tensile strength and favorable impact characteristics, as well as better than average elongation.

Good Corrosion Resistance—The all-alpha iron bearing aluminum bronze alloy, containing approximately 7 per cent aluminum, 2.5 per cent iron and the balance copper, shows excellent resistance to salt or sea water, some acids and alkalies. No alloy is corrosion resistant to all liquids; consequently it is always good practice to conduct corrosion tests with test disks or racks to determine corrosion rate. Such tests show that the all-alpha aluminum bronze has a definite place in application involving salt water, alkalines and acids.

Aluminum bronze, when all-alpha in microstructure, is not generally susceptible to selective attack or dealuminization. The single-phase materials also are less susceptible to intergranular corrosion and to stress cracking if properly processed.

ORTMAN-MILLER SAYS . . .

WARPAGE AND BENDING ELIMINATED

MACHINING SPEED INCREASED 20%

WITH GROUND AND POLISHED

STRESSPROOF®

SEVERELY COLD-WORKED, FURNACE-TREATED STEEL BARS

This piston rod, made by Ortman-Miller Machine Co., Hammond, Ind., for their hydraulic cylinders, is machined from Ground and Polished STRESSPROOF.

When this piston rod was made from C1018, Ortman-Miller had trouble with warpage after machining, and with bending and wear in operation. By switching to Ground and Polished STRESSPROOF, warpage was eliminated and machining speed increased 20%. In addition, STRESSPROOF had the strength to prevent bending, and wear became no problem.

STRESSPROOF has improved quality and lowered costs in hundreds of similar applications because of its unique combination of four qualities in-the-bar: (1) *High Strength*, double that of ordinary cold-finished shafting; (2) *Machinability*, fully 50% better than heat-treated alloys of the same strength; (3) *Hardability*, without case hardening; and (4) *Minimum Warpage*. STRESSPROOF is available in cold-drawn or ground and polished finish.

STRESSPROOF makes a better part at lower cost.

SEND FOR . . .
Free Engineering Bulletin
"New Economies in the Use of Steel Bars"

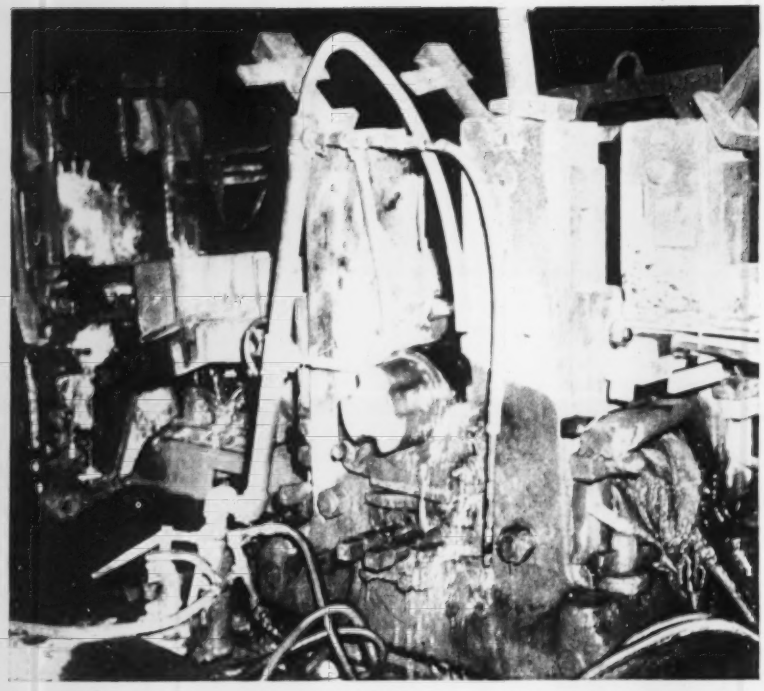
La Salle STEEL CO.

Manufacturers of the Most Complete Line of Carbon and Alloy Cold-Finished and Ground and Polished Steel Bars in America.

La Salle Steel Co.
1414 150th Street
Hammond, Indiana

Please send me your STRESSPROOF Bulletin.

Name _____
Title _____
Company _____
Address _____
City _____ Zone State



Cool water De-blisters hot steel courtesy of tough REPUBLIC WATER HOSE

As red-hot tongues of steel flicker through this 18-inch bar mill, they're met with continuous dousings by Shenango River water.

The water keeps the mill spindles cool and splashes the bar stock with a spine-tingling hiss.

It's a planned shock treatment . . . a procedure used at Sharon Steel Corporation's Roemer Works to remove scaly blisters from the rough metal. **And, naturally, it's a job for hose!**

Just as natural is the fact that Republic Rubber Water Hose is selected for this work where searing temperatures flash by within inches of the hose.

Republic Rubber Hose stands up . . . gives long, trouble-free service under special conditions like these and on any other industrial application where quality is the key to performance.

Get the facts today! Republic Rubber Hose, like all Republic Industrial Rubber Products, is built to **your** requirements and it's applied to the job by experts.

So save yourself time and money . . . make Republic your headquarters for all your Industrial Rubber Products.

BELTING HOSE SINCE 1901 EXTRUDED AND MOLDED PRODUCTS

Your local Republic Distributor can help you lick any problem regarding selection, application and maintenance of Industrial Rubber Products. Write today for the name of your local Republic Distributor who will keep you posted on new developments of interest to your business.

REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS

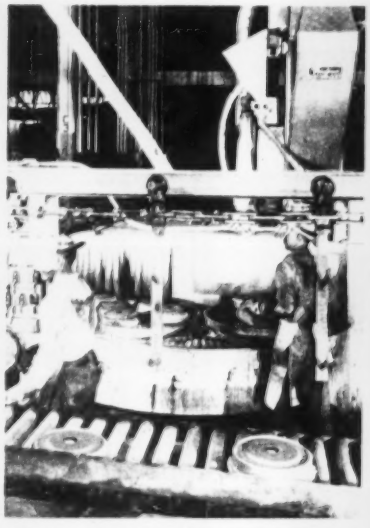
Cleaning: 1½ Cents a Unit

Two blast-cleaners alternate to turn out 4000 automotive brake drums per shift

BUDD CO. turns out 4000 cast iron automotive brake drums per shift at its Red Lion foundry—and cleans them at a cost for labor and abrasives of less than 1½ cents per drum.

As castings leave the shakeout machines, a 90-minute cooling period is allotted before they reach the cleaning area by way of an 850-foot monorail conveyor that passes outside the building. Cleaning then is performed on a Pangborn 9-foot diameter, six-spindle Rotoblast table machine.

Two cleaning machines are installed, one on either side of the monorail. Generally, only one



CONTINUOUS CLEANING LOAD
. . . two passes for each casting

is in operation at a time. The second machine is used as stand-by equipment and takes care of peak loads that may be caused by stoppages along the line. Regular practice calls for using each cleaner 4 hours per shift. Cleaning speed is adjusted to the pace of the monorail conveyor.

Two Passes—Castings are taken off conveyor spindles as they approach the cleaning operators, then passed through the machine under abrasive stream. Cleaned on one side, they are turned over and passed through a second time to

COSTS SLASHED by a WHEELABRATOR® at ALLEGHENY LUDLUM STEEL CORP. in the DESCALING of STEEL STRIP

LABOR	~~24~~ men	5
FLOOR SPACE	~~10,000~~ ft.	6,000
VIRGIN METAL LOSS	~~2%~~	under 1%
SCALE BREAKING		NONE

The cost of descaling hot-rolled stainless steel strip has been drastically cut at the West Leechburg plant of Allegheny Ludlum Steel Corp. Chief cost saver is the elimination of scale breaking on straight chrome grades.

In addition, five men can now operate the Wheelabrator descaling line compared to 24 men for the batch pickling operation which it replaced. It requires only about 6,000 sq. ft. of floor space against 10,500 sq. ft. for pickling. The loss of virgin metal has been eliminated and the scale removed is in an easily recoverable condition. Weight loss varies according to grade but the average is well under 1%. This compares with a metal loss of 2% in pickling. A large reduction has been made in the amount of acid used which has helped their acid disposal problem.

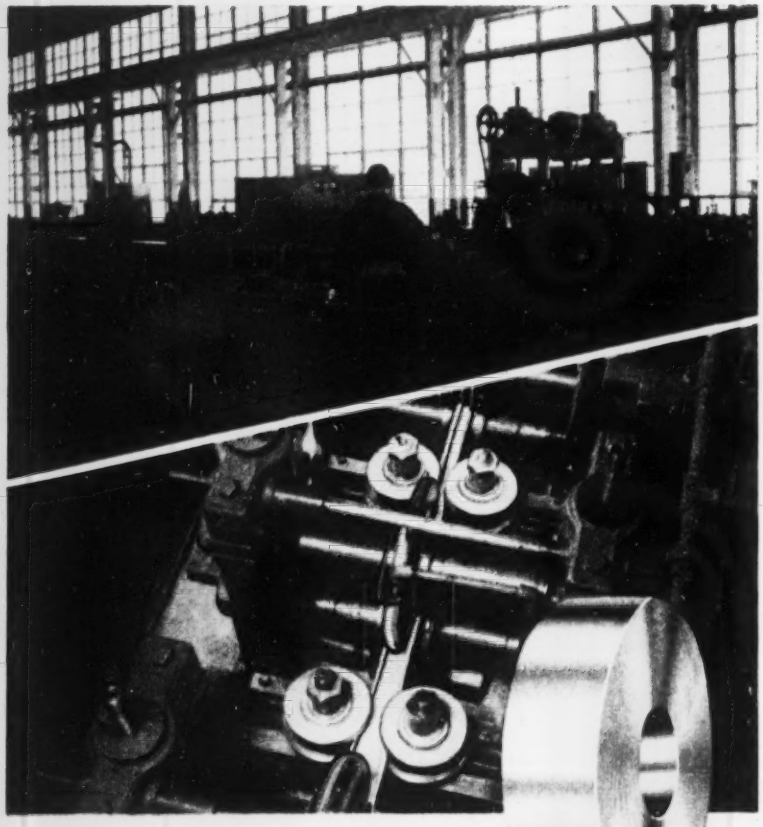
The Wheelabrator is cleaning stainless steel strip in widths ranging from 9" to 37½" at speeds from 35' to 75' per minute. However, it may be applied to the cleaning of low carbon steels with equal success at any desired speed.

Savings that result from mechanical descaling of steel strip are described in bulletin 894. Send for your copy today.

WHEELABRATOR —The perfected airless centrifugal blast unit pioneered by American slashes cost and cleaning time. Conserves power, labor, space. Cleaning perfection results in longer tool life, faster machining and grinding, easier inspection.

American
WHEELABRATOR & EQUIPMENT CORP.
509 S. Byrkit St., Mishawaka, Indiana

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST CLEANING EQUIPMENT



UNIFORM

Newly built and newly equipped, Wallingford's tubing mill is as modern as today. This equipment, operated by men of experience, using Wallingford strip steel of consistently high quality, produces tubing that in analysis, tolerance and finish can be counted on to be uniform at all times. This complete dependability provides savings in fabrication. Less down time, fewer rejects, and a finished product of constant quality is assured with Wallingford uniform tubing.

THE WALLINGFORD STEEL CO.

SINCE 1922

WALLINGFORD, CONNECTICUT, U.S.A.

LOW CARBON · HIGH CARBON

ALLOY · STAINLESS · STRIP and TUBING

Wrought Iron Distributor

To protect against corrosion from high-range steam pressure, Westinghouse Sturtevant Division reports it has standardized on 1-inch wrought iron pipe for heater coil and $\frac{3}{8}$-inch for steam distributing systems. The pipe, supplied by A. M. Byers Co., Pittsburgh, is assembled here into space heating and processing units

take care of the reverse face. After cleaning, castings are put on a roller conveyor and moved by gravity to another station where excess metal is ground or chipped off pneumatically. Castings are also inspected in this section before delivery to the shipping department.

The foundry, located in northeast Philadelphia, is producing the 4000 drums per shift with one production line. The plant's 60,347 sq ft of floor space is arranged so a second molding line can be arranged when warranted.

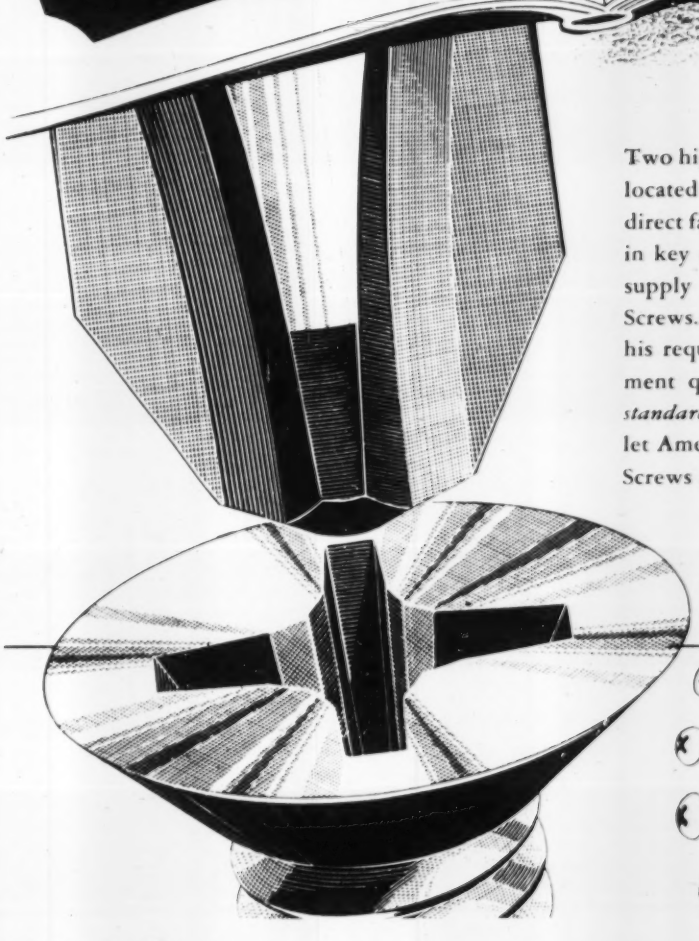
Cost Analysis—The firm reports careful attention to the cost picture for more than a year justifies a cleaning cost figure of less than $1\frac{1}{2}$ cents per drum. Pangborn's Malleabrasive is used at an average 18-2/3 cents cost per 1000 pounds of metal at the spout, or about 0.9-cent per drum cleaned. Direct labor amounts to about $\frac{1}{2}$-cent per drum.

Drums are finished to exact specifications. One part of the foundry output is shipped to Detroit automotive plants and is not machined. But the larger part of the output is machined by Budd and shipped to eastern automotive assembly plants.

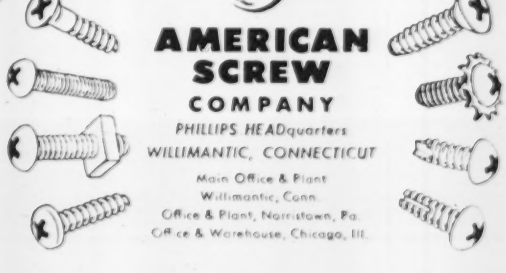
THE AMERICAN STORY

CHAPTER 6:

"LOGISTICS" (or How to Supply You Most Efficiently)



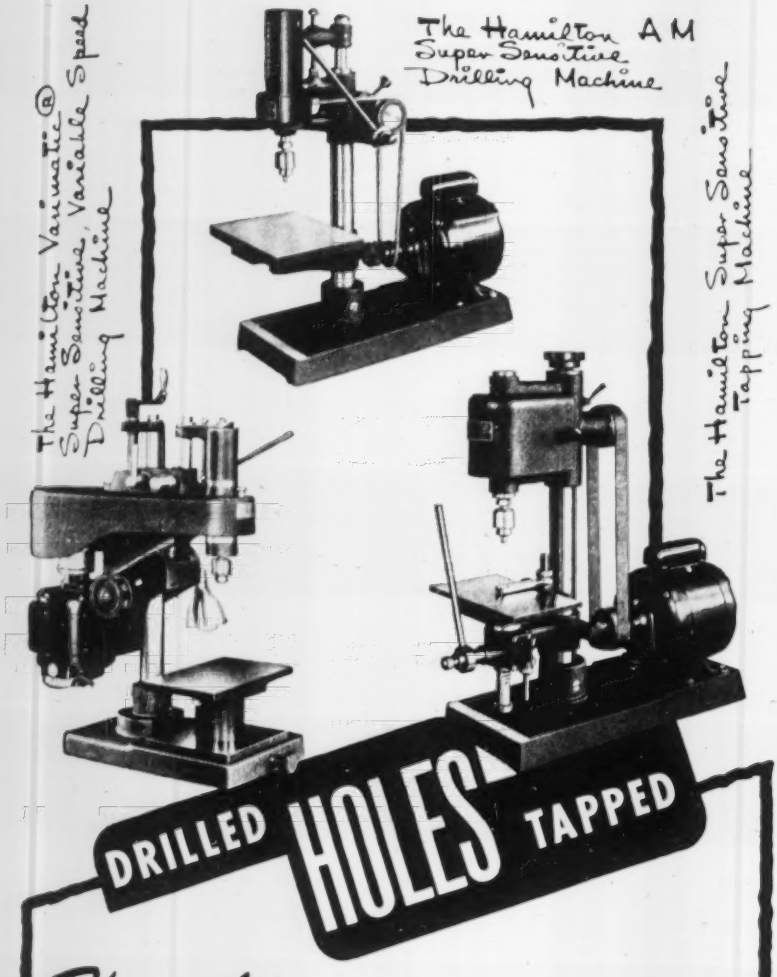
Two high-production plants and a conveniently located mid-continent warehouse . . . plus direct factory representatives and top distributors in key cities from coast to coast . . . this is the supply service set-up for American Phillips Screws. So every user can be sure that he can get his requirements promptly . . . with every shipment quality-controlled to *American's stubborn standards.* If you want to cut your fastening costs, let American show you how American Phillips Screws *always cost less* in the long run. Write:



AMERICAN SCREW COMPANY

PHILLIPS HEADquarters
WILLIMANTIC, CONNECTICUT

Main Office & Plant
Willimantic, Conn.
Office & Plant, Norristown, Pa.
Office & Warehouse, Chicago, Ill.



Hamilton DRILLS AND TAPPERS
MAKE TIME, SAVE COSTS ON
ACCURATE SMALL HOLE PRODUCTION

Small holes . . . *tiny* holes . . . in materials of such diverse characteristics as fiber and monel, ceramic and bronze, are being drilled and threaded speedily, accurately, *profitably* . . . NOW . . . by thousands of Hamilton Drills and Tappers.

The Hamilton VARIMATIC® DRILL,
The Hamilton A-M DRILL,
The Hamilton TAPPER,

each a bench type, super-sensitive machine with ample clearances and travel, incorporate such precision that work is always held well within the tolerance allowed, and such stamina that they maintain their accuracy year after year even under heavy production loads. Our free Bulletin No. V-472 provides full information including specifications. Write now! Tomorrow you may need the information.

THE *Hamilton* TOOL COMPANY
848 SO. NINTH STREET • HAMILTON • OHIO • U • S • A

Ultra-Thin Strip Grows

Demand for precision strip is introducing more cluster mills with small work rolls

THE GROWING miniaturization program is causing an unprecedented demand for precision-rolled ultra thin gage strip metals, according to A. I. Nussbaum, American Silver Co. Inc., Flushing, N. Y. Industry is supplying closer-than-commercial-tolerance strip and foil to the aircraft, instrument, and electronic manufacturers.

Much of the success achieved in this field has been due to the introduction of both 4-high and cluster cold rolling mills with extremely small diameter work rolls. Sendzimir cluster mills with 0.468 and 0.250-inch diameter work rolls have produced 0.0004 and 0.00015-inch thick iron-nickel alloy foils respectively.

More to Come—Even thinner gage metal will result from a mill having 0.100-inch diameter work rolls, which is now being designed. The elimination of batch annealing procedures in favor of continuous strand annealing performed in controlled-atmosphere muffle furnaces has contributed greatly to the production of a high quality uniform strip

While the bulk of production in this field involves carbon steels, stainless steels, copper-base, nickel-base and iron-nickel alloys, special development work undertaken during the last year included the cold reduction to foil gages of the rarer metals, such as tantalum, titanium, molybdenum, tungsten, vanadium and zirconium. It has been found possible, for example, to roll tantalum from 0.010 to 0.0005-inch gage — 95 per cent total reduction — without an intermediate anneal on Sendzimir mills.

Stainless Too—Another field in which the unusually high total reductions facilitated by cluster mills are of great value, is the production of fully work-hardened type 301 (17-7) stainless steel having a tensile strength in excess of 200,000 psi.

Phosphor bronze and 2 per cent beryllium copper foil rolled to extra-close tolerances is finding increasing application in the fabrica-

in WIRE ROPE, too, survival calls for the RIGHT KIND of muscle

Powerful, constrictive muscles give the python the crushing strength that enables him to exist under the grim rules of jungle law—where only the fittest survive.

Same way with wire rope. Here again, ability to last under adverse conditions demands the right kind of muscle. Bending Fatigue . . . Shock Stress . . . Abrasion . . . Load Strain—each demands wire rope that best combines the required resistance factors to overcome the destructive forces encountered in different types of service.

Complete quality control from ore to finished rope; long experience and specialized know-how—these are your assurance that in Wickwire Rope you always get the right construction . . . the right grade of steel and size of wire for long-lasting reliable service on your particular job.

See your Wickwire Rope distributor or contact our nearest sales office.

THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
THE CALIFORNIA WIRE CLOTH CORPORATION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New York • Philadelphia

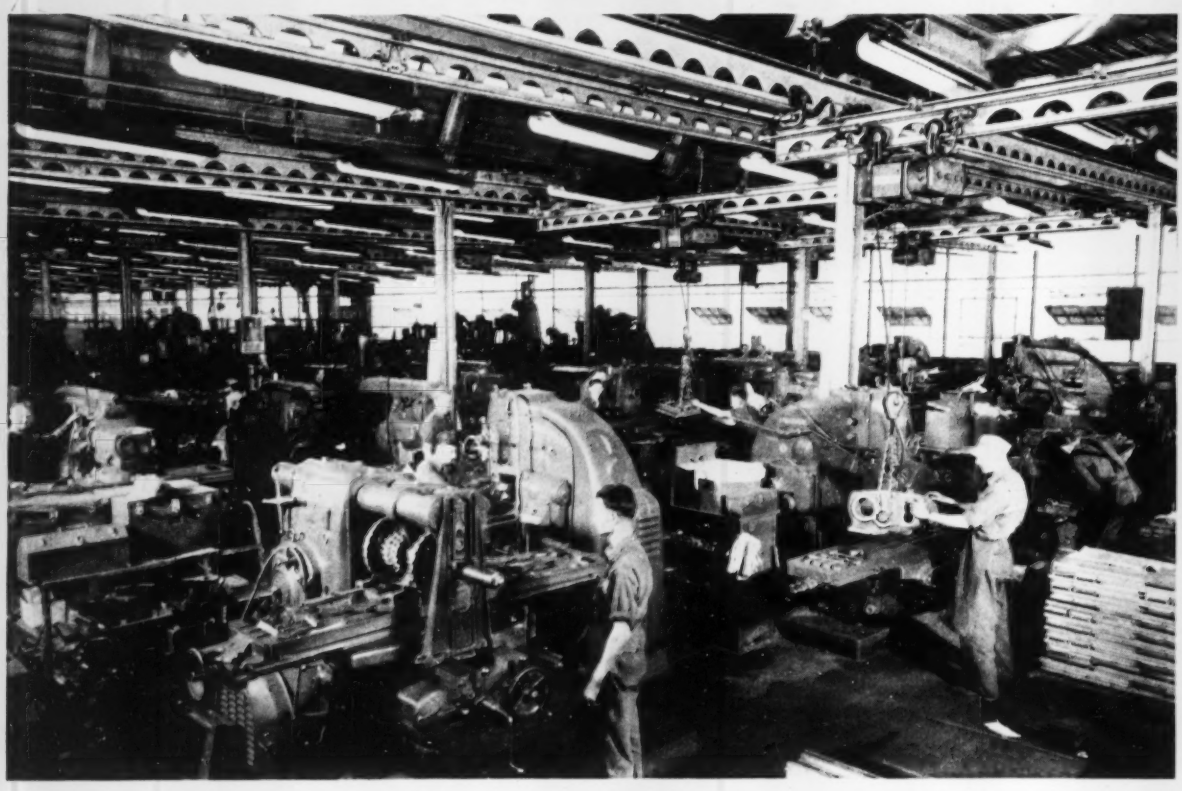
WICKWIRE ROPE
A CF&I PRODUCT

A YELLOW TRIANGLE ON THE REEL IDENTIFIES WICKWIRE ROPE

CF&I

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

TRAMRAIL CRANES SPEED PRODUCTION . . . *and* AID SAFETY

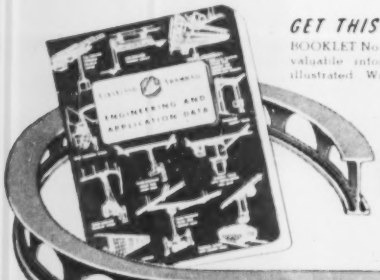


WHEN adequate overhead crane equipment is provided there is no waiting for materials, no loss of time of either skilled men or costly machine-tools, for want of a lift. That means improved efficiency and greater production.

Workers are usually enthused when Cleveland Tramrail Cranes are installed, for it lightens their load. Instead of hard, often back-breaking lifts, their work is reduced to the mere pushing of buttons. Electric hoists and easy rolling carriers do the heavy lifting and hauling.

Safety, too, is given a tremendous boost. Hernias, mashed fingers and toes and more serious accidents are greatly reduced or eliminated entirely.

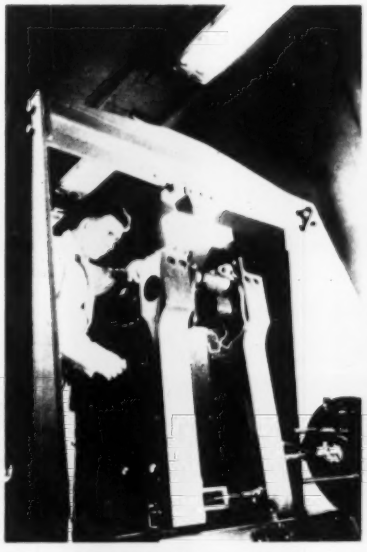
There is little other industrial machinery that returns as large dividends and raises employees' good will as much for the amount invested as Cleveland Tramrail. It will pay you to learn why thousands of leading companies have installed this modern cost-reducing equipment.



GET THIS BOOK!
BOOKLET No. 2008 Packed with valuable information. Profusely illustrated. Write for free copy.

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
7814 East 284th St. Wickliffe, Ohio

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT



Tuning a Crankshaft

Chrysler Corp. engineers are not conducting a music class when they strike this giant tuning fork. They are testing strength and endurance of crankshafts. Vibrations from the fork bend the crankshaft as many as 5000 times a minute, and each bending cycle is more severe than the downward pressure exerted by the pistons on the shaft in heaviest service in a car

tion of diaphragms, contacts and springs. Another beryllium alloy, 40 per cent beryllium aluminum, is now being used experimentally in strip components where its high-strength, low-density characteristics are of major value.

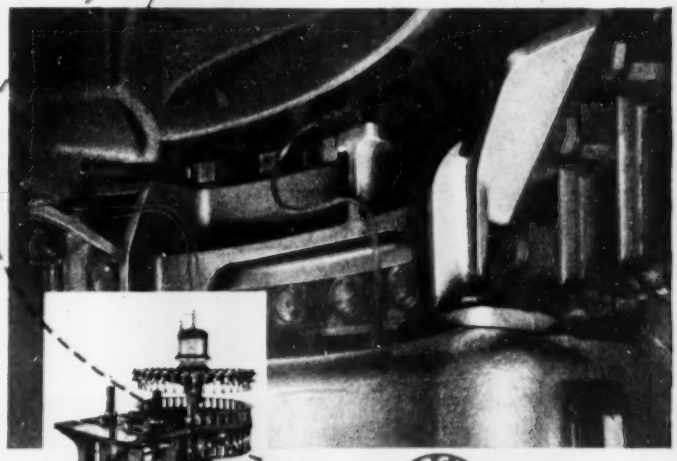
One of the most interesting developments in the use of ultra-thin gage material in the last year has been the manufacture of high-permeability tape-wound magnetic cores, which are already in use in both military and civilian electronic equipment. The tapes involved are made of grain-oriented silicon steel and iron-nickel alloys and range in thickness from 0.005 to 0.00025-inch.

Quality Sulphide Lode Proved

Prospect of commercial exploitation is improved by flotation tests on iron sulphide ores from deposits in Aitkin and Carlton counties in Minnesota, reports U. S. Bureau of Mines. Average sulphur recovery is 87 per cent.

Relatively low silica content of the concentrate also indicates a

CALLING A FIGURE IN A bottle dance



LEBANON Castings ARE AT WORK

EVERYONE is fascinated by the sound and action of modern bottling machinery at work. It's the cams that "call the figures in this bottle dance"! And these cams have to be tough.

In Crown Cork & Seal Company's CEM 40 bottling machine, illustrated above, the sturdy cam is a Lebanon CIRCLE (L) special alloy steel casting. The efficiency of this machine that fills and caps many millions of soft drink bottles a year, is due in part, to the special wear and endurance properties built into the Lebanon Alloy Steel employed in casting the cam. The cam illustrated must hold its form and size, must keep wear to a minimum thereby eliminating expensive machine down-time.

Wherever castings are required, it's sound practice to use only the highest quality. Those bearing the CIRCLE (L) trade mark are high quality products of true Lebanon craftsmanship.

You should see . . .
STEEL WITH A THOUSAND QUALITIES

This 37 min., 16 mm. full color sound film showing the making of steel castings from blueprint to end use should be shown to your staff. For information write: Dept. B, Lebanon Steel Foundry, Lebanon, Pa.

LEBANON Castings
CARBON, SPECIAL ALLOY AND STAINLESS STEEL

LEBANON STEEL FOUNDRY LEBANON, PA.

high-grade iron oxide sinter suitable for blast furnace use can be produced after recovery of the sulphur from the concentrates. The Minnesota deposits are located conveniently near communication and transportation lines and an already-established iron mining company.

One good possibility for use of the deposits might be for development of a Minnesota manganese industry from Cuyuna Range manganiferous ores, according to Paul T. Allsman, director of the bureau's regional office in Minneapolis. Using sulphur dioxide gas, the bureau is already conducting pilot-plant tests in recovering manganese from Cuyuna slate ore in a sulphatizing furnace.

If use of sulphur dioxide gas in the process under investigation is as successful as tests indicate, Mr. Allsman states there is a definite tie-in between manganese-bearing ores and nearby iron sulphide deposits. Iron sulphide could be burned to get sulphur dioxide gas

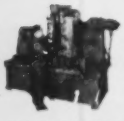
HARTFORD SPECIAL

AUTOMATIC THREAD ROLLERS

Hartford Special Automatic Thread Rollers feature completely automatic hopper feed, vibration free operation and quick and easy setups. Model A-312-H above rolls screws from No. 6 (.138) thru ⅜" diameter with thread lengths up to 2½". Smaller model A-190-H rolls screws from No. 2 (.086) thru No. 10 (.190) with thread lengths up to 1½".

For complete information send for Bulletin TR.

When it comes to production



HARTFORD *Special*

THE HARTFORD SPECIAL MACHINERY CO., HARTFORD 12, CONN.

CALENDAR
OF MEETINGS

February 16-19, American Institute of Mining & Metallurgical Engineers: Annual meeting, Hotel Statler, Los Angeles. Institute address: 29 W. 39th St., New York 18. Secretary: E. H. Robie.

February 16-19, Industrial Ventilation Conference: Michigan State College, E. Lansing, Mich. Co-sponsor: Division of Industrial Health, Michigan Dept. of Health. Information: K. E. Robinson, Division of Industrial Health, Lansing 4.

February 18-20, Society of the Plastics Industry Inc.: Annual reinforced plastics conference. Shoreham hotel, Washington. Society address: 67 W. 44th St., New York 36. Executive vice president: William T. Cruse.

March 2-6, American Society for Testing Materials: Spring meeting, Hotel Statler, Detroit. Society address: 1916 Race St., Philadelphia. Secretary: Robert J. Painter.

March 2-6, Pittsburgh Section, American Chemical Society and Spectroscopy Society of Pittsburgh: Pittsburgh conference on analytical chemistry and applied spectroscopy. Hotel William Penn, Pittsburgh. Information: L. E. Pitzer, U. S. Steel Co., 525 Wm. Penn Place, Pittsburgh 30.

March 3, Open Steel Flooring Institute: Annual meeting, Hotel Drake, Chicago. Institute address: 1506 First National Bank Bldg., Pittsburgh 6. Secretary: Stuart J. Swensson.

March 3-5, Society of Automotive Engineers: National passenger car, body and materials meeting. Hotel Sheraton-Cadillac, Detroit. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

March 4, Steel Kitchen Cabinet Manufacturers Association: Quarterly meeting, Hotel Cleveland, Cleveland. Association address: Engineers Bldg., Cleveland 14. Secretary: Arthur J. Tuscany.

March 6, Bituminous Coal Research Inc.: Annual meeting, Netherland Plaza hotel, Cincinnati. Institute address: 2609 First National Bank Bldg., Pittsburgh 22. Secretary: C. A. Reed.

March 8-11, American Institute of Chemical Engineers: Annual spring meeting, Hotel Buena Vista, Biloxi, Miss. Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

March 11, Foundry Education Foundation: Annual meeting and technical, university & industry advisory committee conference. Hotel Cleveland, Cleveland. Foundation address: Terminal Tower, Cleveland 13. Executive director: George K. Dreher.

March 11-12, Society of the Plastics Industry Inc.: Annual Canadian conference, General Brock hotel, Niagara Falls, Canada. Society address: 67 W. 44th St., New York 36. Executive vice president: William T. Cruse.

March 15-19, American Chemical Society: Spring meeting, Hotels Statler and Biltmore, Los Angeles. Society address: 1155—16th St. NW., Washington 6. Assistant secretary: R. M. Warren.

March 16-18, National Association of Waste Material Dealers: Annual meeting, Hotel Conrad Hilton, Chicago. Association address: 271 Madison Ave., New York 16. Secretary: Clinton M. White.

March 16-20, National Association of Corrosion Engineers: Annual conference, Hotel Sherman, Chicago. Association address: 919 Milam Bldg., Houston 2. Secretary: A. B. Campbell.

March 16-20, National Association of Manufacturers: Institute on Industrial Relations, Hollywood Beach hotel, Hollywood-by-the-Sea, Fla. Association address: 14 W. 49th St., New York 20. Director, employee relations division: Sybil S. Patterson.

March 18-20, American Society of Tool Engineers: Annual meeting, Hotel Statler, Detroit. Society address: 10700 Puritan Ave., Detroit 21. Executive secretary: Harry E. Conrad.

STAINLESS STEEL

HEADS

for TANKS AND BOILERS

. . . delivered ready to use.

Heads machined as required.

Firm delivery dates.

★ ★ ★ ★ ★ Prices on request.

McCABE MFG. CO.

9 WATER STREET, LAWRENCE, MASS.
724 FIFTH AVENUE, NEW YORK, N. Y.

MICHAEL BURTYK
. . . a works supt. of Acme Steel

HERMAN A. POLDERMAN
. . . joins Toledo Stamping & Mfg.

JOHN H. FASSETT
. . . V. P. Hilliard Corp.

(*Continued from Page 68*)

Downey, Calif., plant, **North American Aviation Inc.** He formerly was director of material at the Los Angeles division.

Michael Burtyk was appointed superintendent of **Acme Steel Co.'s** Scarborough Works at Toronto, Ont., construction of which is now nearing completion. Mr. Burtyk, formerly general foreman of manufacturing at Acme's Riverdale Works, Riverdale, Ill., joined the company 23 years ago.

Carl Kalbfleisch, vice president-production, **United Can & Glass Co.,** Hayward, Calif., was promoted to executive vice president.

Marcus W. Keyes was appointed to newly created position of sales engineer for **Pittsburgh Plate Glass Co.'s** fiber glass division, Pittsburgh.

Herman A. Polderman became associated with **Toledo Stamping & Mfg. Co.,** Toledo, O., as assistant to the president. He joined Caterpillar Tractor Co. in 1936, where for the last 16 years he has served in its engineering, metallurgical and production departments.

R. M. Rowland, western sales manager, **DeSoto Division,** Chrysler Corp., Detroit, was appointed to the newly created post of director of merchandising. He is succeeded by **Paul Herpolsheimer Jr.**

Paul F. Aaron was appointed plant manager for **Cincinnati Tool Co.,** Cincinnati.

John H. Fassett, manager, clutch division, **Hilliard Corp.,** Elmira, N. Y., was elected a vice president. He continues as manager of the clutch division in charge of sales, engineering and service.

B. B. Brownell was promoted to assistant chief engineer in charge of design and development, Electro-Motive Division, **General Motors Corp.,** at LaGrange, Ill. **D. S. Smilanich** becomes facilities engineer, **Bert Hefner** electrical section engineer and **L. L. Johnson** senior project engineer.

Dr. Kenneth C. Vincent was appointed supervisor of extraction metallurgy at **Armour Research Foundation,** Illinois Institute of Technology, Chicago. Before joining the foundation he was chief metallurgist for the Baroid Sales Division of National Lead Co., Houston.

Lewis M. Fulton, former assistant general superintendent at the Dominion Steel & Coal Corp.'s steel plant in Sydney, N. S., was appointed acting general manager of **Canadian Tube & Steel Products Ltd.,** Montreal.

Dr. Edmund C. Harder, senior geologist for **Aluminum Ltd.** and subsidiaries since incorporation of the company in 1928, was appointed a member of the board of directors, filling a vacancy created by death of **Leighton McCarthy.**

W. R. Sugg Jr. was appointed assistant manager and **G. A. Moore** as manager of manufacturing in the transportation and generator division, **Westinghouse Electric Corp.,** Pittsburgh.

William F. Wrightnour was appointed assistant to the vice president and general manager, tire division, **United States Rubber Co.,** New York. He is succeeded by **Patrick H. Kelley** as director of training for the division.

Whitfield Chemical Co., Detroit, appointed **Nathan H. Bryant** as its western Michigan representative. He formerly was with Attwood Brass Co., Grand Rapids, Mich., and now will have headquarters in that city.

Thomas E. Hughes was made general manager of the Cleveland Diesel Engine Division, **General Motors Corp.,** to succeed **George W. Codrington,** retired after 36 years of service with the corporation. **Edward A. Kaegi,** factory manager of GM's Delco Radio Division, becomes general manager of the Detroit Transmission Division succeeding **Victor A. Olsen,** also retired after 37 years' service with the corporation. **Paul W. Rhame,** assistant general manager, Allison Division, becomes general manager, New Departure Division, Bristol, Conn., succeeding **Robert E. Waldo,** granted a leave of absence.

John H. Wintersteen was promoted to manager of public relations and advertising for **Kaiser Metal Prod-**

Sound advice...

"LOOK-before you LEAP!"

METAL TREATING INSTITUTE

If you are considering plans for expansion of present heat treating facilities or new plant construction, "Look Before You Leap"—check with an MTI commercial heat treater.

The chances are that you will find a Commercial Heat Treater near your plant with the facilities, equipment, skill and experience to perform "custom-tailored" heat treating operations required for your prime or sub-contract rearmament program work.

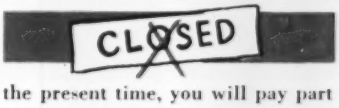
Eliminate Personnel Problems

All members of the Metal Treating Institute are specialists with complete service facilities under one roof. They offer you a variety of skills – handling and processing all types of heat treating from simple stress relief to delicate controlled atmosphere hardening, cyaniding, etc. This experience and know-how would be practically impossible for you to duplicate under today's conditions.

Avoid Future Waste

The recent post-war years proved the wisdom of using established facilities in your locality. Many expanded plant departments and new construction had to stand idle or be scrapped when the crisis passed.

It is good business to avoid possible repetition. Remember, even if only Government money is involved at



the present time, you will pay part of the cost eventually. Conservation of Government spending is always of benefit to you.

A Good Policy

When faced with heat treating problems, or the need for heat treating services, contact the Metal Treating Institute or any MTI member listed on this page. All detailed inquiries receive prompt attention.

National Trade Association

COMMERCIAL HEAT TREATERS

METAL TREATING INSTITUTE

271 NORTH AVENUE — NEW ROCHELLE NEW YORK

METAL TREATING INSTITUTE

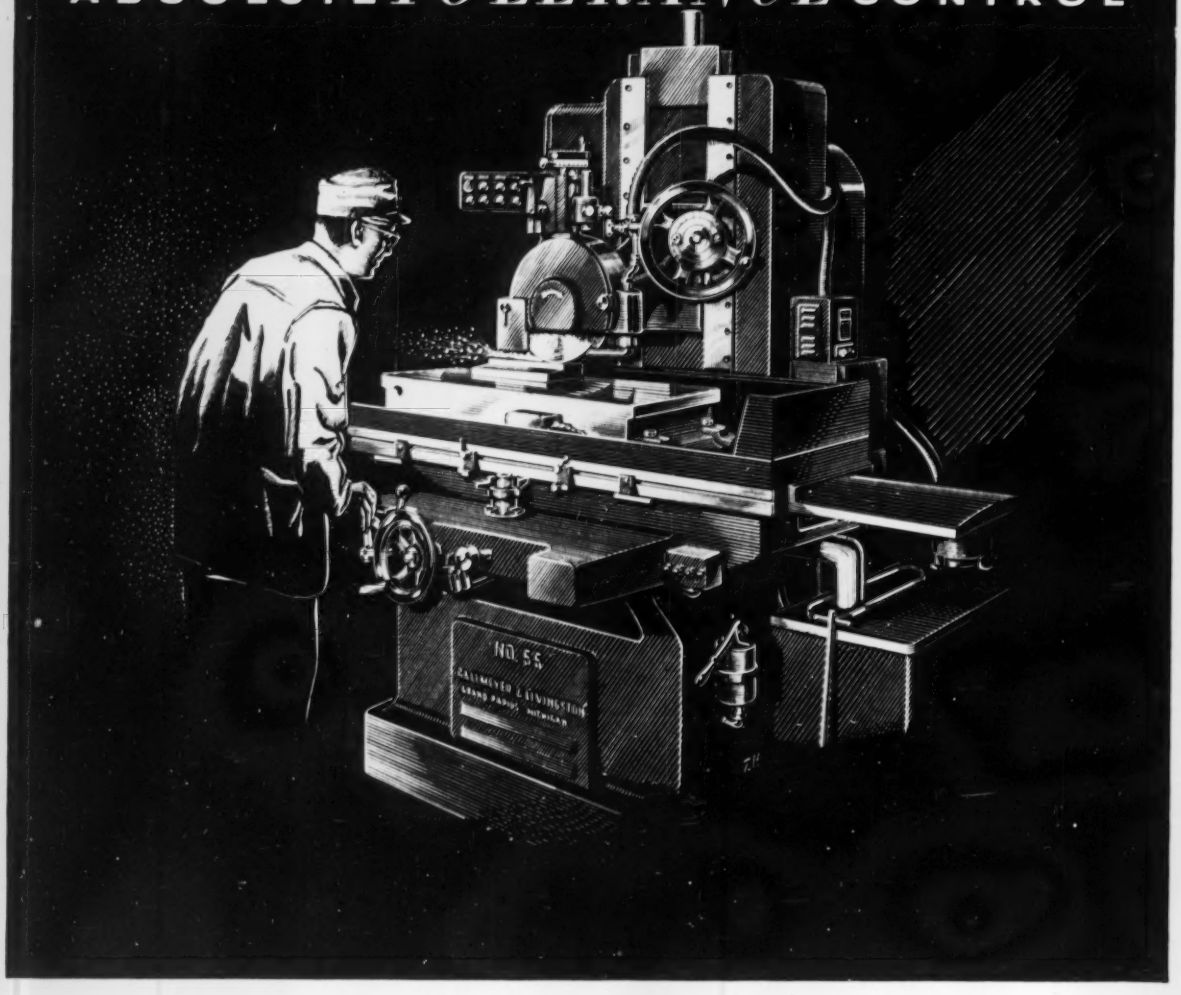
*Consult these Companies**

There's a Heat-Treating Specialist Near Your Plant!

Benedict-Miller, Inc.
Lyndhurst, New Jersey
California-Doran Heat Treating Co.
Los Angeles 23, California
Commercial Steel Treating Corp.
Detroit 4, Michigan
Cook Heat Treating Co. of Texas
Houston 11, Texas
The Dayton Forging & Heat Treating Co.
Dayton 3, Ohio
The Drever Company
Philadelphia 33, Pennsylvania
Greenman Steel Treating Company
Worcester 5, Massachusetts
Fred Heinzelman & Sons
New York 12, New York
Alfred Heller Heat Treating Co.
New York 7, New York
Hollywood Heat Treating Co.
Los Angeles 38, California
Industrial Steel Treating Co.
Oakland 8, California
L-R Heat Treating Company
Newark, New Jersey
The Lakeside Steel Improvement Co.
Cleveland 14, Ohio
Lorenz & Son
Philadelphia 22, Pennsylvania
Metal Treating, Inc.
Milwaukee 4, Wisconsin
Metallurgical Control Labs.
Minneapolis 7, Minnesota
Metallurgical, Inc.
Kansas City 8, Missouri
Metlab Company
Philadelphia 18, Pennsylvania
O. T. Muehlemeyer Heat Treating Co.
Rockford, Illinois
New England Metallurgical Corp.
South Boston 27, Massachusetts
Paulo Products Company
Saint Louis 10, Missouri
Pearson Industrial Steel Treating Co.
Chicago 50, Illinois
Pittsburgh Commercial Heat Treating Co.
Pittsburgh 1, Pennsylvania
The Queen City Steel Treating Co.
Cincinnati 25, Ohio
Reliable Metallurgical Service, Inc.
Cleveland 14, Ohio
J. W. Rex Company
Lansdale, Pennsylvania
Stanley P. Rockwell Company
Hartford 5, Connecticut
Winton Heat Treating Company
Cleveland 16, Ohio

**This advertisement sponsored by these Companies*

ABSOLUTE *TOLERANCE* CONTROL



When job specifications leave no leeway, when extreme tolerances must be maintained . . . that's when the built-in precision and absolute tolerance control of Grand Rapids Grinders proves most valuable. Defense commitments make it impossible for us to fill your orders as rapidly as we'd like to . . . but we know our customers can appreciate the reasons for delay. As always, we're doing our best to serve you.

GALLMEYER & LIVINGSTON CO.
307 Straight Ave., Grand Rapids, Mich.

GALLMEYER & LIVINGSTON

GRAND RAPIDS GRINDERS

. . . the very best

Manufacturers of
SURFACE GRINDERS • CUTTER and TOOL GRINDERS • TAP and DRILL GRINDERS

ucts Inc. at Bristol, Pa. He leaves Kaiser Steel Corp.'s Oakland, Calif., office.

Dan A. Ringis was appointed plant manager of Chrysler Motors Los Angeles plant, **Plymouth Division**, to succeed **C. C. Rowles**, assigned special duties on the staff of **F. L. DeCavitte**, operating manager of the entire Plymouth Division.

Renier Co. Inc., newly incorporated firm of engineers and designers, established offices at 5209 Euclid Ave., Cleveland. It is headed by **William S. Renier**, president, who for the last two years was director of engineering of Hydraulic Press Mfg. Co., Mt. Gilead, O. **H. F. Fischer** of Fischer & Associates, Cleveland, was elected vice president of the new corporation and **L. W. Sahley**, president of Euclid Tool Engineering Co., is secretary-treasurer.

William B. Kempton was made sales manager and **Gerald D. Fisher** assistant sales manager of the hardware products department, **Wickwire Spencer Steel Division**, Colorado Fuel & Iron Corp. They continue to be located in the sales office, hardware products department, at the subsidiary, American Wire Fabrics Corp., Mt. Wolf, Pa.

In the industrial chemicals division, **American Cyanamid Co.'s** metal chemicals section, **Paul J. Kondla** was named eastern regional representative replacing **A. E. Broady**, who will serve as a representative in the Cleveland district.

New Jersey Zinc Co., Palmerton, Pa., appointed **David L. Gamble** manager of research to succeed **George F. A. Stutz**, transferred to the New York office.

D. Clinton Grove retired from **Blaw-Knox Co.**, Pittsburgh. He joined the company in 1920 as advertising manager and in 1944 was named assistant to the executive vice president.

J. M. Ilacqua was appointed field engineer for **Lamson Corp.** in the western New York territory with headquarters in Buffalo.

At **Pontiac Motor Division**, General Motors Corp., Pontiac, Mich., **Charles O. Johnson** was promoted

(*Please turn to Page 110*)

Extensive Stock

OF

KENNAMETAL TOOLS,

BLANKS, and INSERTS

NOW CARRIED BY OUR

DISTRICT WAREHOUSES

AT STRATEGIC POINTS

This expanded service enables you to quickly realize the plus value of Kennametal tooling — decreased cost — increased productivity. There's a Kennametal tool for your every need.

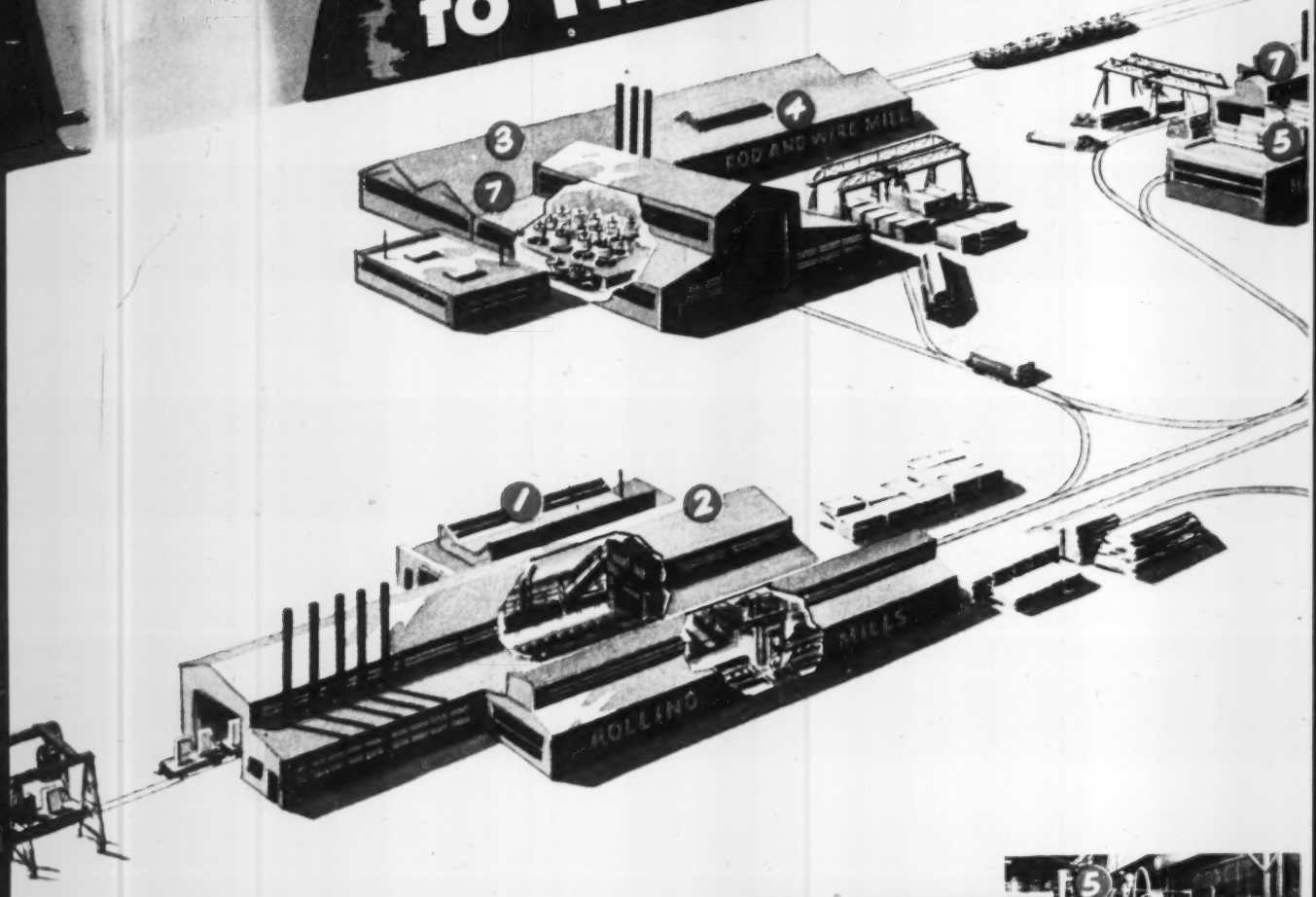
If you desire help in tooling problems — selection, application, or maintenance — our field engineers are at your service.

Kennametal Inc., Latrobe, Pa.

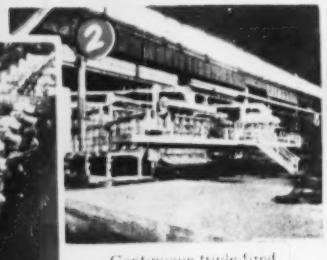
KENNAMETAL®

CEMENTED CARBIDE TOOLING THAT INCREASES PRODUCTIVITY

from INGOT to FINISHED PRODUCT

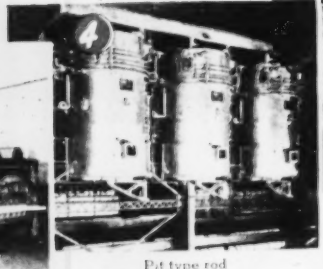


One-way fired recuperative soaking pits

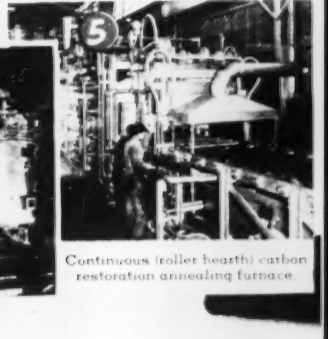


Continuous triple-fired slab and billet furnace

Continuous wire patenting furnace



Pit type rod annealing furnace

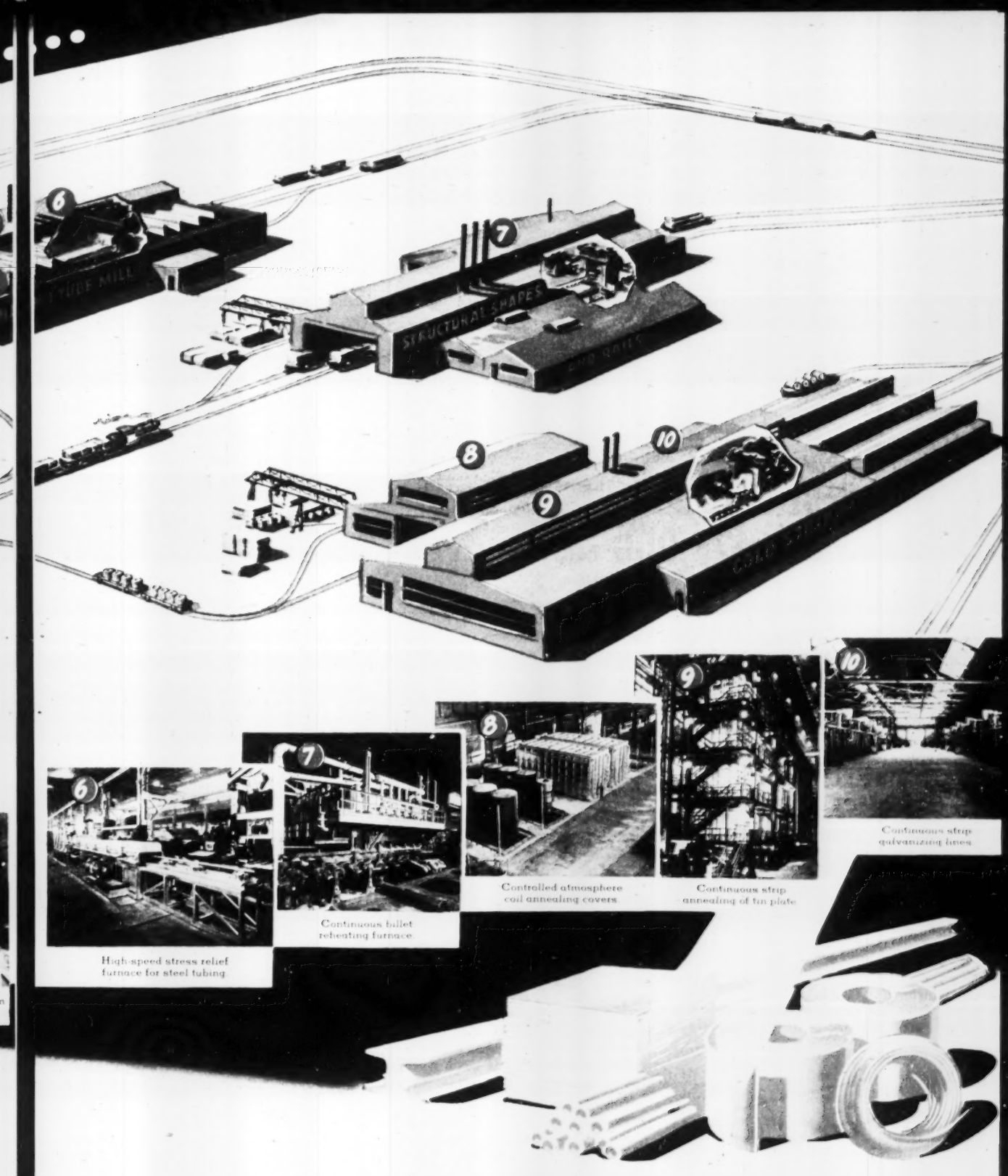


Continuous (roller hearth) carbon restoration annealing furnace

Surface

SERVES THE STEEL INDUSTRY

SURFACE COMBUSTION CORPORATION, TOLEDO, OHIO



High-speed stress relief furnace for steel tubing

Continuous billet reheating furnace

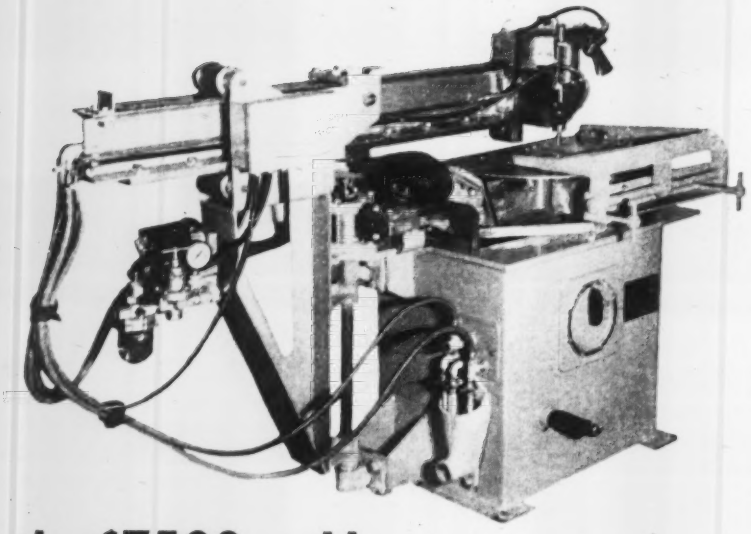
Controlled atmosphere coil annealing covers

Continuous strip annealing of tin plate

Continuous strip galvanizing lines

. . . IN HUNDREDS OF SUCCESSFUL INSTALLATIONS, IS LIVING UP TO ITS REPUTATION FOR BIG TONNAGE . . . END RESULTS OF THE HIGHEST QUALITY...DEPENDABLE PERFORMANCE SECOND TO NONE!

"A GREAT PRODUCTION NAME IN THE STEEL INDUSTRY"



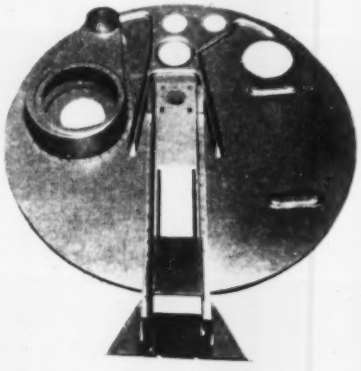
the $7500 welder that saved $25,000 the first year

A machine that increased production enough to effect savings that were double or triple the machine cost during the first year is news to many fabricators not familiar with the versatility of the modern resistance welder. With one man this machine will take the place of four conventional guns and two rocker arm welders requiring a total of six operators. It also eliminates the loss of production due to the unnecessary shifting of the work pieces between operations.

Here is factual proof that special equipment effecting cost saving need not be expensive.

Recent Federal designed and built machines have combined assembly with welding, forming with welding and high speed multiple-shop welding of complete assemblies.

This is part of the reason why—from the start—Federal has always been First In Resistance Welding.



This inner bulkhead assembly for an automatic dryer requires about 50 spot welds. Federal designed a new type expansion gun welder (above) where the gun is supported on the end of a horizontal beam mounted on rollers—moves in all directions—automatically welds as operator squeezes pistol trigger. Manufacturer figures this has saved $25,000 over old method during first year.

Federal WELDERS ®

Warco PRESSES ®

THE FEDERAL MACHINE & WELDER COMPANY
WARREN, OHIO

to assistant to the general manufacturing manager to succeed **David J. Dunlop**, retired. **Charles L. DeLorge** succeeds **Carl F. Heymann**, retired, as motor plant superintendent, and is succeeded by **G. Robert Scharf** as superintendent of the 40 mm automatic cannon plant.

Walter R. Hillman was appointed assistant to the vice president in charge of production at **Eutectic Welding Alloys Corp.**, Flushing, N. Y. **Joseph Quaas** was appointed manager, electrode production division and **Andre Jaccard**, assistant to the executive vice president.

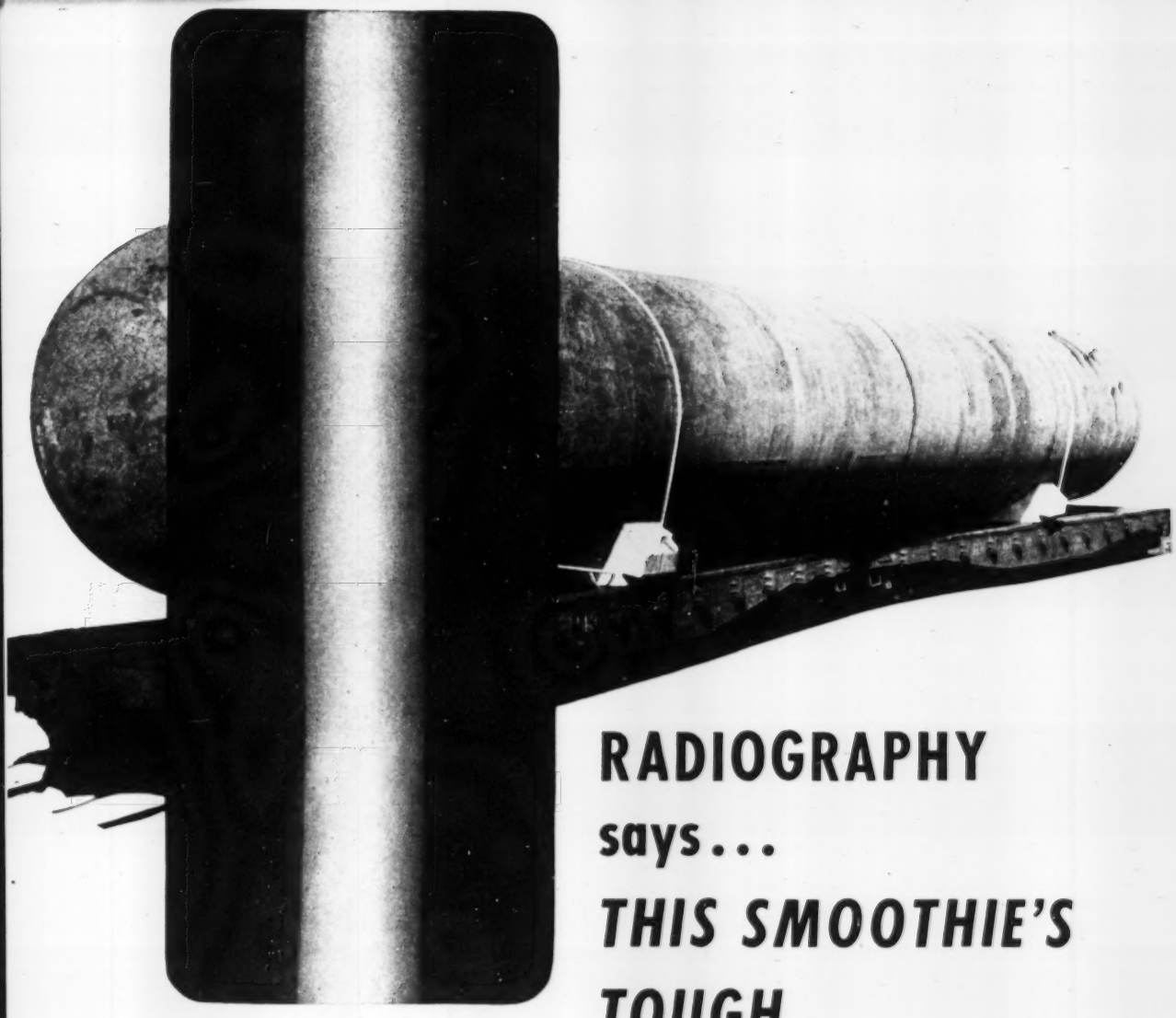
Edwin P. Crenshaw was appointed general sales manager, coach division, GMC Truck & Coach Division, **General Motors Corp.**, Pontiac, Mich. He succeeds **Herbert E. Listman**, retired. Mr. Crenshaw is succeeded by **Alvin S. McEvoy** as assistant general sales manager.

Formerly associated with Wheelco Instruments Co., the following have joined **Taco West Corp.**, Chicago. **Charles T. Laechelt** becomes purchasing agent, **Ardmore M. Willer** assistant sales manager, **Edward O. Marquardt** chief mechanical engineer, and **Charles B. Karch** production manager.

Irving R. Lewis was promoted to vice president, **Syracuse Stamping Co.**, Syracuse, N. Y. He will handle production and purchasing.

Theodore V. Purvin was appointed general sales manager, **Amgears**

THEODORE V. PURVIN
Amgears gen. sales mgr.



RADIOGRAPHY says... *THIS SMOOTHIE'S TOUGH*

This 90-ft. pressure vessel looks smooth, clean, and neat. But that's not all that welding did for it. It helped make the tank strong and tough with less weight and at lower cost.

Designers of pressure vessels can take full advantage of the welding process because each weld can be proved sound by radiography.

This is how radiography widens the opportunities for welders—why it can increase your business.

Wouldn't you like to know more about how it can help you? Get in touch with your x-ray dealer and talk it over.

EASTMAN KODAK COMPANY
X-ray Division, Rochester 4, New York

Radiography . . .
another important function of photography

Kodak
TRADE-MARK

there's a "right" tool for every job

and

a "right" fastener...

You wouldn't intentionally slow down your production lines with inefficient tools or use the wrong machine for the job at hand. Isn't it equally logical to make sure that every fastening job is done with a fastener that is "just right"?

Differences in hardness and thickness of the tapped material require selection of the right type of tapping screw thread. This, in turn, works best with selection of the right hole size.

Lamson fastener engineers can advise you how to reduce the variety of fasteners and sizes at each assembly station, cut costs and improve assembly. Lamson control of quality and Lamson design produce low drive torques—high strip torques. Solve your fastening problems with Lamson Tapping Screws.

...specify *Lamson* tapping screws

Lamson & Sessions

The LAMSON & SESSIONS Co.
1971 West 85th St. • Cleveland 2, Ohio
Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

Check the products below that interest you; tear off bottom of ad and send to us for complete information.

MACHINE SCREWS
Precision made for fast economical assembly.

SEMS
Pre-assembled lockwashers on tapping and machine screws.

TAPPING SCREWS
Choice of round, pan, truss, flat oval, hexagon and Phillips heads.

CAP SCREWS
"1035" Hi-Tensile Heat-treated steel.

SQUARE AND HEX MACHINE SCREW NUTS
Semi-finished, hot pressed, cold punched.

LOCK NUTS
Economical, vibration proof. Can be used repeatedly.

COTTER PINS
Steel, brass, aluminum and stainless steel.

"1035" SET SCREWS
Cup point type, hardened and heat-treated.

ROBERT GRIFFIN
. . . div. supt., Bingham-Herbrand

Inc., Chicago, subsidiary of Hupp Corp.

Bingham - Herbrand Corp., Fremont, O., promoted **Robert Griffin** to general superintendent, aviation division. He has been superintendent in the division's forge shop which produces buckets and blades for jet engines.

William D. Banks is Canadian sales supervisor, **Link Welder Corp.**, with headquarters at Windsor, Ont.

Andrew C. Perrin was appointed to the newly created post of West Coast district sales manager, **Reliance Electric & Engineering Co.**, with headquarters in San Francisco. **Keith E. Carter**, sales engineer in Pittsburgh since 1950, was transferred to the Chicago office replacing Mr. Perrin. **J. Edward House Jr.** was named to the Pittsburgh area.

American Pulley Co., Philadelphia, appointed **Henry H. Hamilton**, formerly advertising manager, to assistant manager, materials handling division; **Joseph C. Salette Jr.**, formerly St. Louis district manager, to sales promotion and advertising manager; **G. L. Michel** to the St. Louis position; **S. S. Stuart** to district manager at Philadelphia; and **J. J. McFarland**, district manager of the Minneapolis office.

Ralph E. Knight was promoted from assistant general manager, chemical division, to vice president of **Kaiser Aluminum & Chemical Corp.**, Oakland, Calif., in charge of

the A-B-C of M-S-T

A ALWAYS MAKES POSSIBLE
B BETTER PRODUCTS AT LOWER
C COST

Michigan
Electric Resistance
WELDED
STEEL
TUBING

A Quality Product

ROUND
3/8" to 4" O.D. 9 to 22 gauge
SQUARE-RECTANGULAR
1/2" to 2" 20 gauge, 1" to 2 3/4", 14, 16, 18 gauge
Carbon 1010 to 1025

Michigan Tubing
has uniform strength, weight, ductility, I. D. and O. D., wall thickness, machinability, and weldability. It can be flanged, expanded, tapered, swaged, beaded, upset, flattened, forged, spun closed, fluted, and rolled. Available in a wide range of sizes, shapes and wall thicknesses, prefabricated by Michigan or formed and machined in your own plant.

Muffler Inlet Pipe

This is an excellent example of Michigan workmanship in the performance of several intricate fabricating operations to most exacting tolerances.

The pipe manifold end is expanded to 2.225" I. D., a flange superimposed, and a flanged ferrule press-fitted for immediate assembly to exhaust manifold. Two bending operations with minimum reductions permit full flow of gas to hold back-pressure to a minimum. Muffler end diameter of tube is increased by expanding and a bead superimposed to form a "gas-tight" joint.

Michigan engineering and fabrication know-how make for accuracy and economy in the manufacture of this and many other tubular products. Why not consult Michigan about your fabrication problem.

Consult us for engineering and technical help in the selection of tubing best suited to your needs.

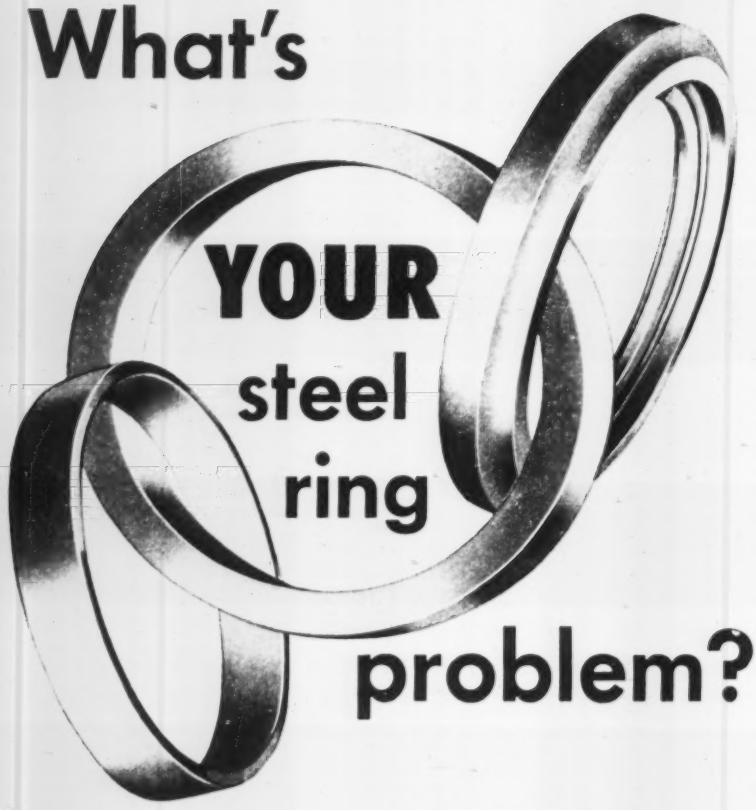
Plus Fabricating of our own tubing Michigan is interested ONLY IN THE FABRICATION OF Stainless steel, copper, brass and aluminum tubing.

Michigan ELECTRIC RESISTANCE WELDED STEEL TUBE PRODUCTS CO.
THE OLDEST NAME

More than 35 Years in the Business
9450 BUFFALO STREET • DETROIT 12, MICHIGAN
FACTORIES: DETROIT, MICHIGAN—SHELBY, OHIO

DISTRIBUTORS: Steel Sales Corp., Chicago, St. Louis, Milwaukee, Indianapolis and Minneapolis—Miller Steel Co., Inc., Hillside, N. J.—C. L. Hyland Co., Dayton, Ohio—James J. Shannon, Milton, Mass.—Service Steel Co., Los Angeles, Calif.—Strong, Carlisle and Hammond Co., Cleveland, Ohio—Globe Supply Co., Denver, Colorado—W. A. McMichaels Co., Upper Darby, Pa.—A. J. Fitzgibbons Co., Buffalo, N. Y.—Harry E. Clark & Co., Houston, Texas—J. B. Beaird Co., Inc., Shreveport, La.—C. I. Crals Co., Birmingham, Alabama.

What's YOUR steel ring problem?



With forty years' experience in manufacturing circular rolled and welded steel parts for industry, Cleve-Weld engineers specialize in solving ring problems. If your contracts call for parts utilizing stainless steel or other types of rings or bands, call on Cleve-Weld. We have the equipment, the skilled man-power and engineering to assure quick delivery with economy and accuracy of production. Write for Cleve-Weld's General Catalogue today.

CLEVELAND WELDING COMPANY
West 117th Street and Berea Road, Cleveland 7, Ohio
Subsidiary of
AMERICAN MACHINE & FOUNDRY CO.
NEW YORK

Specialists in RINGS·BANDS·WELDMENTS

research and development. Other appointments include **W. R. Woodman** to manager of the aluminum division's raw material operations; **Frank M. Cashin** to manager of the chemical division; **Jack W. Watson Jr.** to assistant to the vice president and general manager of the corporation; and **R. A. Fratus** to head the analysis and planning department.

Named assistant general superintendents at **Kaiser Steel Corp.**, Fontana, Calif., Works, are: **Clarence R. Lohrey** in charge of expanded iron and steel production facilities; **Thomas G. Simison** in charge of the diversified rolling mill operations; **Ernest F. Donatic** in charge of maintenance services, utilities and transportation; **James P. Williams**, assistant to the general superintendent, in charge of industrial and plant engineering, plant safety and traffic department; and **Edward J. Duffy**, manager of raw materials development, and responsible for operations of Kaiser Steel Corp. iron ore and coal mines.

Fred Bode was appointed district manager of sales for Wisconsin by **Lapham-Hickey Co.** His headquarters are Milwaukee. He succeeds **Dave Devine**, retired.

Richard Stockton was made northeast district manager, **St. Paul Hydraulic Hoist**, Minneapolis.

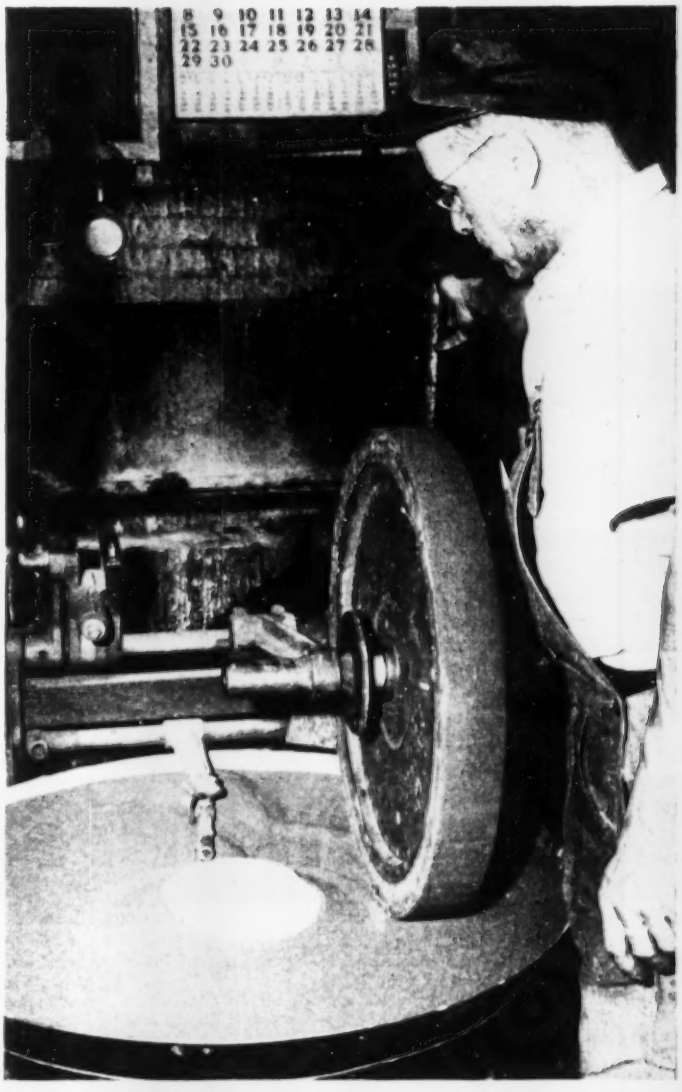
Peter B. Tursi was appointed chief metallurgist of the **Riverside Metal Co.**, Riverside, N. J. He has been

PETER B. TURSI
chief metallurgist at Riverside Metal

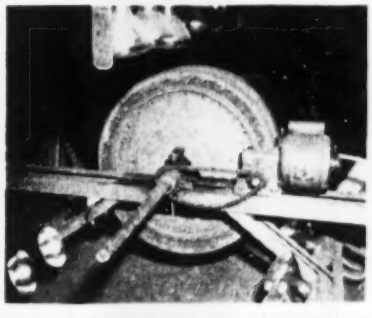
Put these practical tips to work for you

44-page book shows you how to set up metal polishing wheels and belts

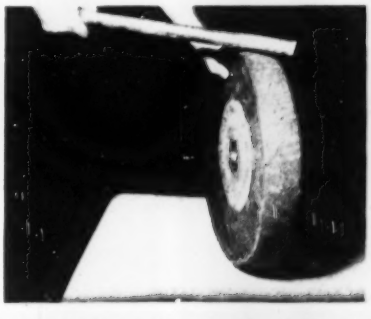
Plan now to take advantage of the wealth of information in the Norton Booklet No. 1340, "Setting Up Polishing Wheels and Belts." This useful booklet tells how to prepare the glue, how to set up wheels using either glue or cement, how to set up abrasive belts, how to get the best results from polishing. It contains detailed information on abrasive grain for polishing, including tables for selecting grains. Norton Company, Worcester 6, Mass. Distributors in all principal cities. Export: Norton, Behr-Manning Overseas Inc., Worcester 6, Mass.



HOW TO SET UP a polishing wheel. Glued wheel, shown here, is automatically rolled in a trough of abrasive grain. To minimize jelling, the setting-up operation is carried out as quickly as possible.



HOW TO DRY a polishing wheel. Infrared lamps dry wheels faster and permit smaller inventory of wheels. Note mechanism for rotating wheels easily. Ideal dry room maintains temperature of 85° F. and 50% relative humidity. When wheel cracks readily, it is dry.

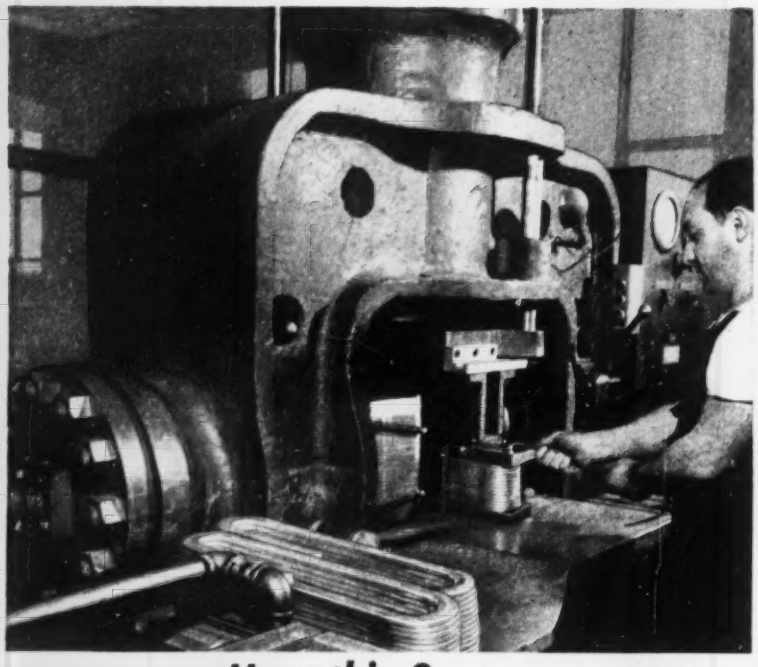


HOW TO CRACK the wheel head. Wheel face is hit at about a 45° angle, being struck completely around the wheel once or twice. It is then hit at an angle that forms an "X" with the first series of cracks. A round bar or pipe, *not a sharp tool*, is used.

NORTON

ABRASIVES

Making better products to make other products better



How this 2-way

FARQUHAR Hydraulic Press

forms motor and generator coils

In producing motor and generator coils from ¼ x 1-in. copper stock, the stock is first bent and the ends laminated, and then pressed to restore them to their original thickness. Then, the coil is put in this Farquhar 2-way Hydraulic Press for "pressing" the form.

The coil is laid on a steel block, a three-part filler mandrel inserted, and a top block applied. The press "snugs" the coil sides at low pressure (40 tons); then the vertical ram snugs the top. The operator kicks the pressure-shift pedal, to double vertical-ram pressure for forming.

Capacities of rams are 100 tons horizontally and 200 tons vertically. Illustration above shows operator withdrawing the coil after forming has been completed.

Farquhar Presses Cut Your Costs

The above installation is just one more example of Farquhar performance in heavy production! Farquhar Presses are built-for-the-job . . . assure faster production due to rapid advance and return of the ram . . . greater accuracy because of the extra guides on the moving platen . . easy, smooth operation with finger-tip controls . . . longer life due to positive control of speed and pressure on the die . . . long, dependable service with minimum maintenance cost!

Farquhar engineers are ready to help solve whatever production problem you may have. Their expert assistance is yours for the asking. Give them a call . . at no obligation, of course!

Or, send for our free catalog showing Farquhar Hydraulic Presses in all sizes and capacities for all types of industry. Write to: THE OLIVER CORPORATION, A. B. Farquhar Division, *Hydraulic Press Dept.*, 1522 Duke St., York, Pa.

Farquhar

HYDRAULIC PRESSES

for Bending • Forming • Forging • Straightening • Assembling • Drawing Extruding • Swaging • Forging • and other Manufacturing Operations

THE OLIVER CORPORATION • A. B. FARQUHAR DIVISION

associated with the company since 1936 when he began as a production worker.

Frank Scarr was promoted by **Kaiser Steel Corp.**, Oakland, Calif., to assistant to the vice president in charge of operations. He previously was assistant controller. **Carter H. Gray** was made assistant superintendent of the continuous weld pipe mill at the Fontana Works.

Raybestos-Manhattan Inc., Passaic, N. J., appointed **W. Ward Kievit** treasurer to succeed the late **George R. Weber.** Mr. Kievit is also comptroller and a director. **William S. Simpson** was named general manager, Raybestos Division, succeeding **Robert B. Davis**, retired. Mr. Simpson is also secretary and a director of the corporation. **Osborn H. Cilley** succeeds Mr. Weber as general manager of U. S. Asbestos-Grey-Rock Division at Manheim, Pa., where **S. R. Zimmerman Jr.** will be assistant general manager.

Herbert E. Fenton was named Pittsburgh area mining sales and service engineer for **Carboloy Department**, Detroit, General Electric Co.

P. Grant Forman, executive vice president, was elected president, **Industrial Silica Corp.**, Youngstown. **Myron E. Ullman** was made vice president. **Jacob S. Coxey Jr.**, president, has retired due to ill health. He continues as chairman.

C. P. Desmond, assistant treasurer, **Bethlehem Pacific Coast Steel Corp.**, San Francisco, retired after 43 years of service with Bethlehem Pacific and predecessor companies.

Robert M. Healey was appointed general manager and director of **United-Carr Fastener Co.**, Hamilton, Ont.

Alexander Daignault was elected a director of **Baird Associates Inc.**, Cambridge, Mass., to replace **William Elfers**, resigned.

DeWalt Inc. appointed **Clay Hendricks** Chicago district manager to replace **Truman Jones** who devotes full time to government sales.

Howard A. Reid, former advertising and sales promotion manager, General Cable Corp., joined **Amer-**

Every tiny bit of JESSOP steel is bigger than its job

There's a very simple reason for Jessop's fine reputation as a specialty steel maker. Jessop not only controls its formulae and processes with infinite care, it traditionally strives to produce better steel of each type than the end-use necessitates. Take, for example, the high-speed tool bits shown here. They cut harder materials faster and deeper than their basic analysis indicates, thus providing longer life and greater durability on normal jobs. Behind this tradition for extra quality is the keen desire for more business on the part of the Jessop producing and selling team. Every single Jessop man wants more satisfied customers. He wants them to be so enthusiastic they will forget there is anyone else in the world making special steels. Some customers already have.

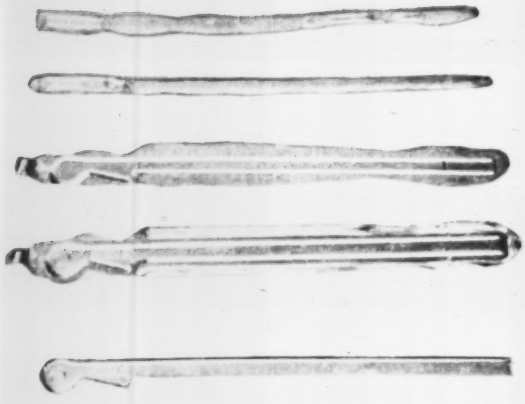
HIGH SPEED STEELS · HIGH SPEED BITS · PRECISION GROUND FLAT STOCK · HIGH SPEED AND ALLOY SAW STEELS · HOT WORK DIE STEELS · COLD WORK DIE STEELS · CARBON AND ALLOY STEELS · GROUND AND TEMPERED PRODUCTS · STAINLESS AND HEAT RESISTING STEELS · STAINLESS CLAD STEELS · CAST TO SHAPE STEELS · COMPOSITE TOOL STEELS · ARMOR PLATE

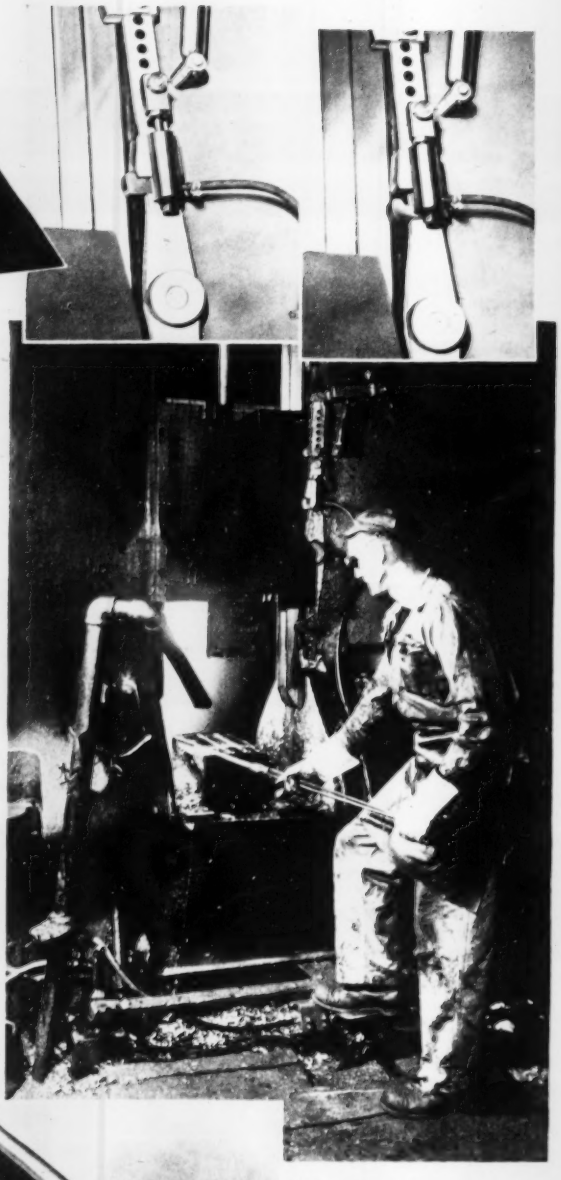
JESSOP

STEEL COMPANY · WASHINGTON, PA.

CECO-DROP SHORT STROKE CONTROL

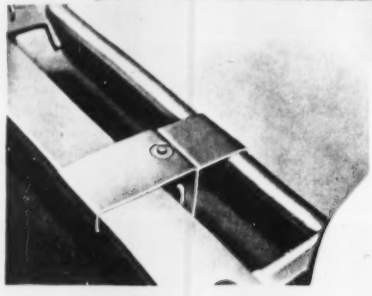
"Makes the Hammer Talk!"





An installation of a Short Stroke Control on a 2500 lb. CHAMBERSBURG CECO-DROP HAMMER is shown, forging steel ankle joints for leg braces. Above are samples of the forging as it appears during various stages. The forging process begins with a series of 20 to 23 short, rapid blows (about 18" stroke) to draw the 2½" dia. stock. This is followed by two long blows (about 35" stroke) to roll it, three more long blows in the rough impression, and three more long blows to complete the forging. After the last blow the ram is stopped on the up-stroke at the "short blow" position for the next forging.

Short Stroke Control is but one of the many features of Chambersburg CECO-DROPS. These piston lift, gravity drop hammers are setting new standards in forge shop production. Lower operating costs, minimum down time, easy operation, wide range of operations, extra safety, all add up to "more forging per hour" the basis on which to judge the efficiency of a Drop Hammer. Write for Bulletin 11-L-0.



(Above right) Dog in full stroke Position. Wedge is lifted, Short Stroke Control is inoperative.

(Above left) Dog in Short Stroke Position. Wedge is down, holding dog in operating position.

(Lower left) Button on treadle when depressed by operator shortens the stroke. Release reverts to full stroke.

CHAMBERSBURG ENGINEERING COMPANY, CHAMBERSBURG, PA.

CHAMBERSBURG

THE HAMMER BUILDERS

EDWARD J. ENGLAND
. . . a V. P., Chicago Freight Car & Parts

ican Machine & Foundry Co., New York, as advertising and sales promotion manager, general products group.

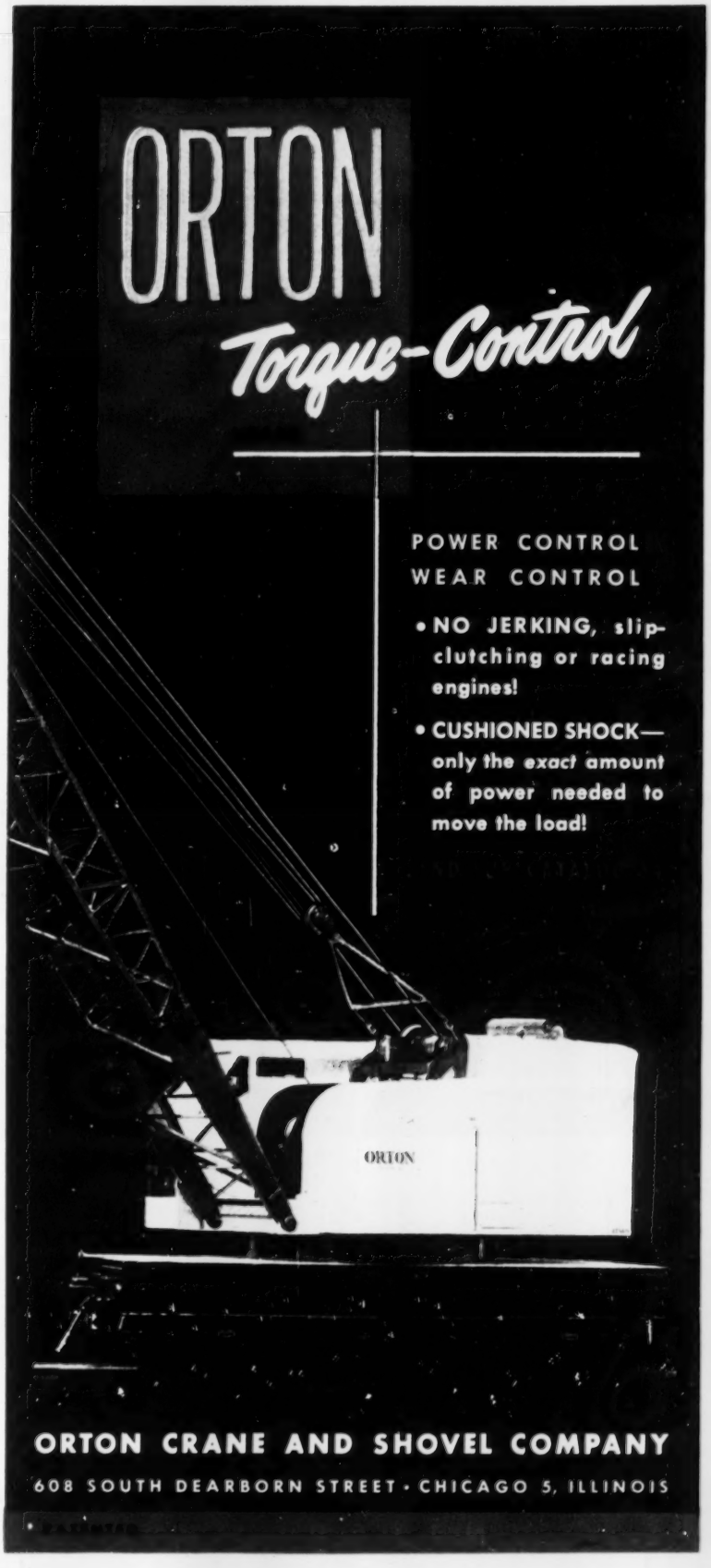
Edward J. England was promoted from general manager to vice president in charge of operations for **Chicago Freight Car & Parts Co.** In his new position, Mr. England continues to supervise operations of the company's shops in Chicago, Pueblo, Colo., and Auburn, Wash. In addition he is responsible for all purchasing functions.

Sterling Hardware Mfg. Co., Chicago, promoted **James D. W. Lloyd** to sales manager. **Thor Ohman** joined the company as product engineer.

William M. Martin, formerly vice president-sales for Crittall Inc., has joined **Ceco Steel Products Corp.** as assistant manager, steel window department. His headquarters are in Chicago.

Stanley M. Rumbough Jr., now assistant to the secretary of commerce in the new administration, resigned as president of **Metal Container Corp.** and secretary and director of sales of **White Metal Mfg. Co.**, Hoboken, N. J. **H. Robert Miller,** formerly assistant director, was appointed director of sales of White Metal Mfg., and **Charles Stiassni,** plant manager becomes secretary.

H. J. Murray was appointed chief accountant for **Hyster Co.**, Portland, Oreg.


ORTON
Torque-Control
POWER CONTROL
WEAR CONTROL
• NO JERKING, slip-clutching or racing engines!
• CUSHIONED SHOCK—only the exact amount of power needed to move the load!
ORTON
ORTON CRANE AND SHOVEL COMPANY
608 SOUTH DEARBORN STREET • CHICAGO 5, ILLINOIS

The U. S. Steel Supply team that gives you

personalized service

He keeps our service in step with your needs

BECAUSE of his extensive background and experience in handling steel supply requirements, our Assistant District Manager is looked upon as the coach of the sales team. His knowledge of local steel users and buying policies, plus his administrative ability help the U. S. Steel Supply salesman give you the best possible service. No supply problem is too difficult, no emergency is beyond control when our salesmen and our Assistant District Manager go to work on it.

Call your U. S. Steel Supply salesman. Give him your order. No matter what the problem, it will be worked out efficiently and to your best interests by the members of our personalized service team.

YOUR "ONE CALL" SOURCE OF STEEL SERVICE

U.S. STEEL SUPPLY

UNITED STATES STEEL SUPPLY DIVISION, UNITED STATES STEEL CORPORATION
HEADQUARTERS: 208 So. LA SALLE ST., CHICAGO 4, ILL. WAREHOUSES AND SALES OFFICES:

BALTIMORE · BOSTON · CHICAGO · CLEVELAND · HOUSTON · LOS ANGELES · MILWAUKEE · MOLINE, ILL.
NEWARK · PITTSBURGH · PORTLAND, ORE. · ST. LOUIS · TWIN CITY (ST. PAUL) · SAN FRANCISCO · SEATTLE
Sales Offices: INDIANAPOLIS · KANSAS CITY, MO. · PHILADELPHIA · PHOENIX · ROCKFORD, ILL. · SALT LAKE CITY · SOUTH BEND · TOLEDO
TULSA · YOUNGSTOWN

USS

UNITED STATES STEEL

NEW PRODUCTS and equipment

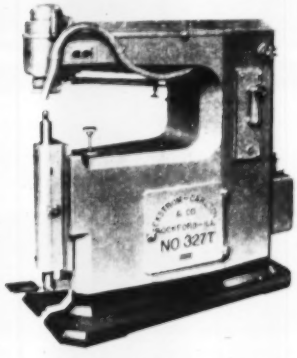
Reply cards on page 135 will bring you more information on any new products and equipment in this issue

Trim Routing Machine

. . . for large nonferrous sections

Designed specially for the aircraft industry, the model 327-T is suited for trim routing large and difficult-to-handle nonferrous sections. A selector lever and a simple belt change control two spindle speeds, 10,000 and 20,000 rpm.

Physical dimensions include a 27¾-inch throat clearance and a floor to guide pin holder height of 32¾ inches. Adjustable distance from the guide pin holder end to



the spindle face ranges from 3 to 9¼ inches. Maximum stroke is 6¼ inches. Ekstrom, Carlson & Co., Dept. ST, 1400 Railroad Ave., Rockford, Ill.

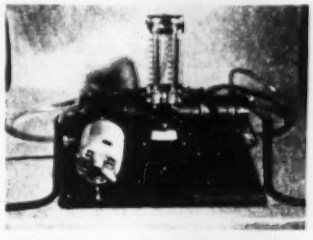
USE REPLY CARD—CIRCLE No. 1

Air Filter Tester

. . . meters filter efficiency

This testing device provides an accurate measure of air filter efficiency on the job rather than in the laboratory. It incorporates filter test methods developed by the National Bureau of Standards to provide factual in-service ratings comparable for all types of air filters and cleaners.

Among advantages is a continuous record of filter efficiency over any given period of time. Efficiency is determined on normal air



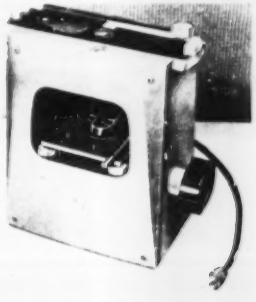
contaminants, without applying synthetic dusts. The tester is compact and portable, weighing 20 pounds with proportions about the size of a typewriter. Trion Inc., Dept. ST, 1000 Island Ave., McKees Rocks, Pa.

USE REPLY CARD—CIRCLE No. 2

Wire Drawing Die Checker

. . . measures entrance angles

Optical instrument measures entrance angles of wire drawing dies to an accuracy of plus or minus 10 minutes of arc without damaging



the die. Multiple angles and poor polish are obvious immediately. Every size of carbide wire drawing die can be measured accurately down to dies as small as 0.005-inch.

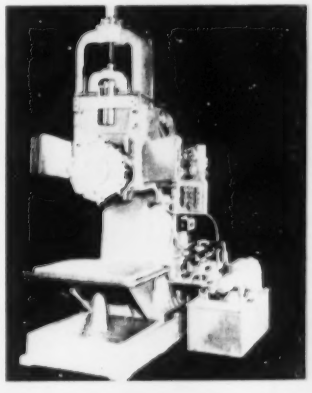
The instrument provides a practical shop instrument for checking die angles before they can affect wire quality. It is portable, constructed of lightweight aluminum castings with integral light source and transformer. Instrument Division, American Optical Co., Dept. ST, Buffalo 15, N. Y.

USE REPLY CARD—CIRCLE No. 3

Drilling, Tapping Machine

. . . larger models available

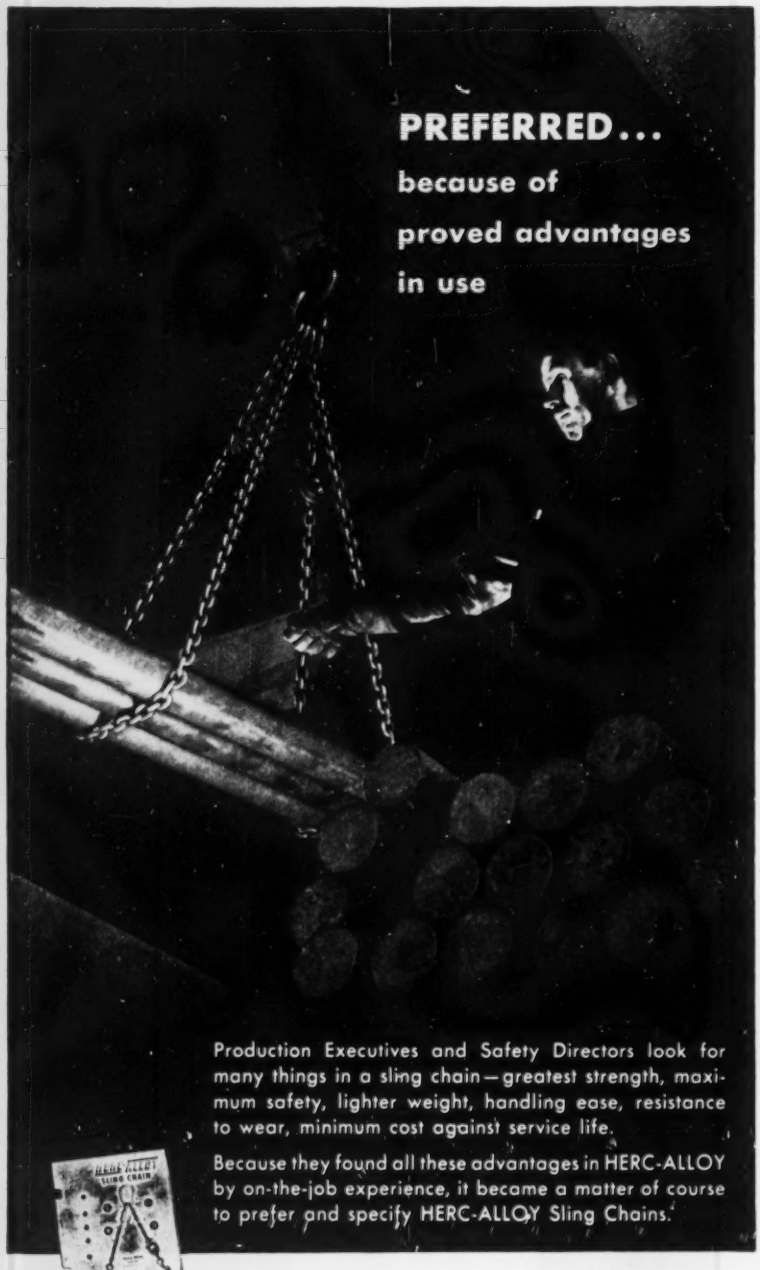
Model 3-BH eight-spindle automatic hydraulic unit provides a larger capacity Burgmaster drilling and tapping machine. Drill capa-



city is 1¼-inch in mild steel. Machine has 12-inch spindle and head travel, 19-inch table travel. Throat clearance is 17½ inches. Table work surface: 36 inches wide by 35 inches deep, with T-slots. Unit has a 10-hp, two speed motor. Spindles have Timken bearings.

Twelve preselective spindle speeds range from 167 to 1765 rpm four to each spindle. Automatic cycling is provided through all sta-

HERC-ALLOY
SLING CHAINS



Production Executives and Safety Directors look for many things in a sling chain—greatest strength, maximum safety, lighter weight, handling ease, resistance to wear, minimum cost against service life.

Because they found all these advantages in HERC-ALLOY by on-the-job experience, it became a matter of course to prefer and specify HERC-ALLOY Sling Chains.

Write for illustrated Data Book No. 3 which contains helpful information on sling chain selection and use.

COLUMBUS McKINNON CHAIN CORPORATION
(Affiliated with Chisholm-Moore Hoist Corp.)
GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.
District Offices: New York • Chicago • Cleveland
Other Factories at Angola, N. Y., Dixon, Ill., St. Catharines, Ont., Can., and Johannesburg, South Africa

NEW PRODUCTS and equipment

tions. Burg Tool Mfg. Co., Dept. ST, 3743 Durango Ave., Los Angeles, Calif.

USE REPLY CARD—CIRCLE No. 4

Light Trolley Conveyor

. . . fully enclosed, continuous

Light, fully-enclosed continuous chain conveyer is built for a wide variety of overhead handling ap-

plications. Its design eliminates complicated wearing parts and requires a minimum of maintenance.

Called the Chainveyor, the extremely flexible short radius curves and straight tubular track sections mean easy installation. Mathews Conveyer Co., Dept. ST, Ellwood City, Pa.

USE REPLY CARD—CIRCLE No. 5

Heavy Towing Tractor

. . . drawbar rating: 12,000 lbs

Heavy industrial and aircraft towing requirements can be accommodated by this tractor's 12,000-pound drawbar full rating. A 16A Chrysler engine powers the unit.

Fluid coupling, the manufacturer's axle design and a low silhoutte are other features.

The 6-cylinder gasoline engine develops 114 bhp at 3200 rpm. With

TO MAKE MORE STEEL FASTER ...WITH LESS FUEL

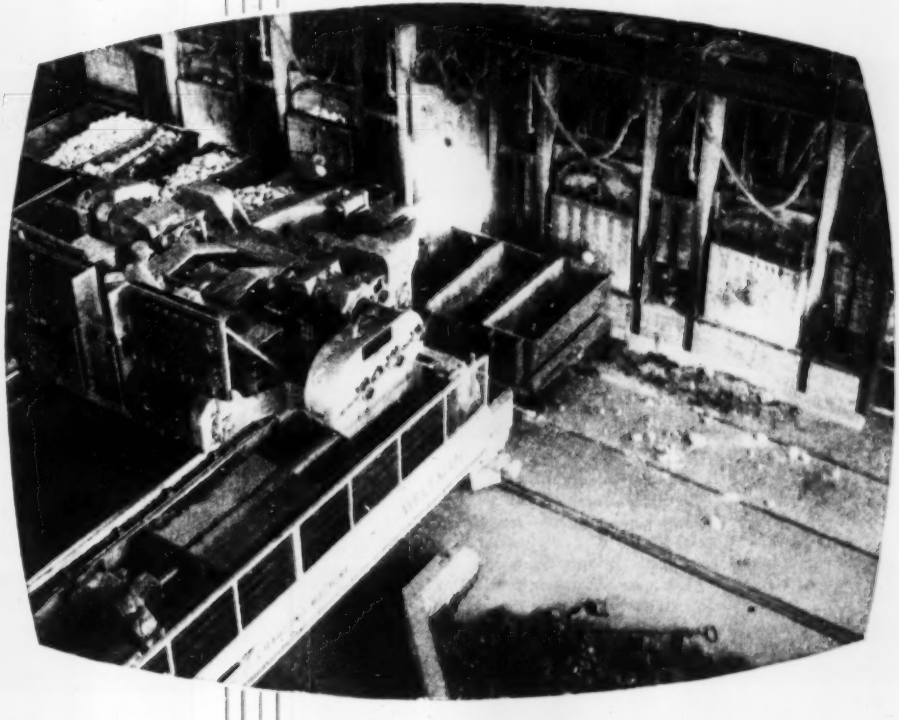
Most open hearth operators seal out excess cold air infiltration and reduce radiation losses by using *Therm-O-Flake* Insulation products. The result is higher preheat temperatures, sharper operating furnaces, with more tons of steel per hour and lower fuel cost per ton of steel produced.

THERM-O-FLAKE insulation products, including block, brick, coating, concrete and concrete aggregate, are designed especially to provide safe, complete insulation for steel plant service.

Write for new bulletin giving detailed recommendations for complete insulation of a typical open hearth furnace using *THERM-O-FLAKE* insulation products.

ILLINOIS CLAY PRODUCTS COMPANY

Chicago, Illinois • 208 South LaSalle Street
Joliet, Illinois • Barber Building



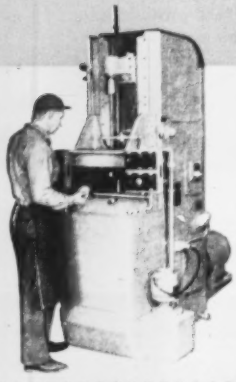
THERM-O-FLAKE INSULATION
has been used in most of the new open hearth furnaces built in the United States in the past five years!

USE.. ....THERM-O-FLAKE INSULATION

three steps

to lower broaching costs

the American way



1 AN American MACHINE

American engineers design and build more than 50 models for surface and internal broaching. One of these standard models is probably the *right* model to speed your production, and lower your broaching costs. However, if yours is a special broaching problem, American can build you a special machine to beat that problem. Production bottlenecks are easily solved by American experience.

2 AN American BROACH

American broaches are designed with the same skill used on American machines. We know the demands placed on broaching tools by machines and we build accuracy and durability into every American tool. They maintain closer tolerances, and last longer because they are built the American Way.

3 AN American FIXTURE

Excessive handling of the part being broached costs you money. To get the most from your machine and your broaching tools you need a fixture to properly hold and handle the part during the broaching operation.
Because American builds all three — machines, broaches, and fixtures — we have the know how to get the most from every fixture, every tool, every machine.

WANT TO KNOW MORE ABOUT THE AMERICAN WAY OF LOWERING BROACHING COSTS

Send for American Broach Catalog #450, 32 pages of useful information on American products that solve broaching needs. Or if you have a special broaching problem in your plant, just send a part print or sample and hourly requirements for our engineers' specific answer. Address Dept. S. No obligation of course.

American BROACH & MACHINE CO.
A DIVISION OF SUNDSTRAND MACHINE TOOL CO.
American Building - Ann Arbor, Michigan

SUNDSTRAND

NEW PRODUCTS and equipment

the fluid coupling, this engine provides greater horsepower at low engine speed, thereby cutting wear and extending life for the power unit.

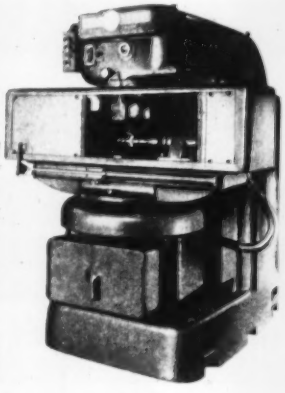
Model has four speeds forward, with maximum 16.3 mph, and one reverse. Industrial Truck Division, Clark Equipment Co., Dept. ST, Battle Creek, Mich.

USE REPLY CARD—CIRCLE No. 6

Diagonal Gear Shaving Unit

. . . automatic upfeed, return

Automatic precision up-feed in selected increments throughout the shaving cycle and automatic return to proper backlash position are provided by a mechanism built into a diagonal gear shaving machine. This offers the user a choice



of conventional or diagonal shaving in the same machine.

For shaving diagonally, the cycle is no longer limited to two strokes. It can now include several cutting strokes, each with its own increment of up-feed, plus one or more idling strokes. Cycle time is decreased due to rapid up-feed. National Broach & Machine Co., Dept. ST, 5600 St. Jean Ave., Detroit 13, Mich.

USE REPLY CARD—CIRCLE No. 7

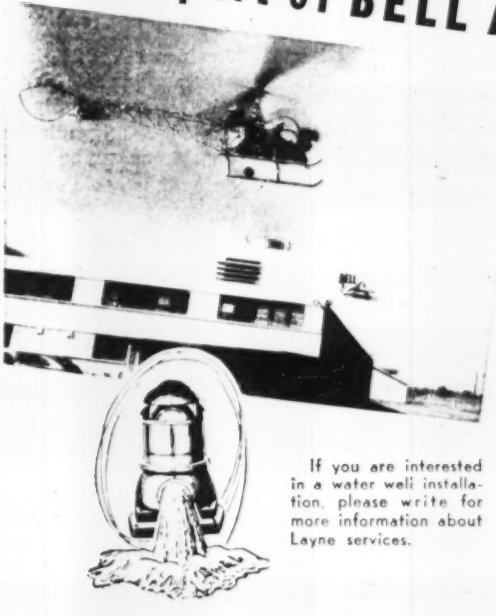
Paralleling Drafting Board

. . . other tools unnecessary

For architectural design and field drafting, this redesigned drafting board makes the T-square and other drawing instruments unnecessary. Straight line, parallel and angular drawing require no

LAYNE WATER WELLS

. . . are part of BELL AIRCRAFT'S amazing growth



If you are interested in a water well installation, please write for more information about Layne services.

One of America's most interesting sagas of industry, is the amazing growth of Bell Aircraft Corporation's Helicopter Division at Hurst, Texas. From this great plant Bell "eggbeaters" have gone to all parts of the world—both for war and peacetime service.

When Bell Aircraft selected a site for their big Texas plant, they immediately ordered the installation of a complete Layne Water Supply System. Today that single Layne installation is more than fulfilling all water supply needs for both manufacturing and employees—and apparently can continue to do so for many years to come. Layne is happy to name Bell Aircraft Corporation as another in a long list of important industrial organizations that own Layne Water Wells and Pumps.

LAYNE & BOWLER, INC.
General Offices, Memphis 8, Tenn.

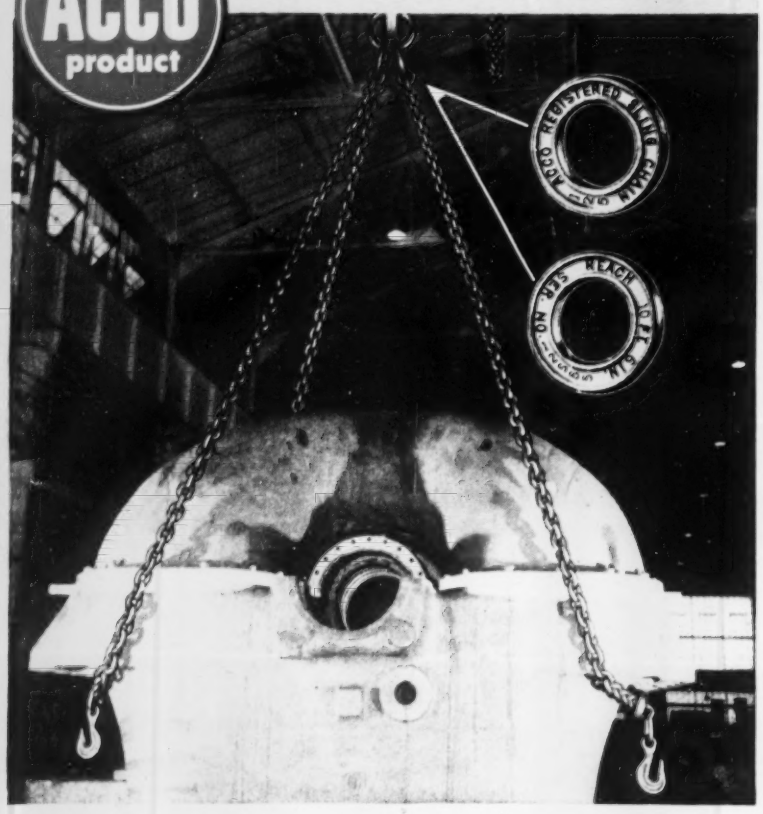
Layne

Without obligation Layne will be glad to provide a complete file of late catalogs and literature on modern water supply wells and high efficiency vertical turbine pumps.

WATER WELLS
VERTICAL TURBINE PUMPS
WATER TREATMENT

an ACCO product

AMERICAN CHAIN



"Why do we use American Chain?"

"For two reasons," said this manufacturer of heavy machinery. "First, we have used American Chain successfully for years. Second, the high strength alloy it is made from permits using smaller diameter chain which is hooked up easily by our men. And the men like the way the grab hooks slip over the links and set themselves securely. I think they just feel safer working with American Chain."

This AMERICAN CHAIN user is referring to our 125 Endweldur alloy steel, heat-treated ACCO Registered sling chain with our series 40 drop forged grab hooks.

No matter what chains you require, AMERICAN has them and will furnish chains that will last longer . . . and cost less to use. Call your AMERICAN CHAIN distributor today and let him make recommendations. Or write to our York office for Bulletin DH-314.

ACCO

TRADE MARK

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

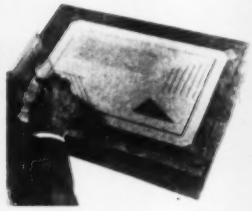
York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

American Chain

NEW PRODUCTS and equipment

additional equipment except a triangle.

Rubber desk grips on back of board hold it on any desk in a horizontal or angular position without



slipping. Transparent plastic indicator measures each parallel movement of the rule in fractions of an inch. Board sizes are available in 12 x 13, 15 x 19 and 21 x 25 inches. Bradford Bailey Co., Dept. ST, Box 440, Elizabeth, N. J.

USE REPLY CARD—CIRCLE No. 8

Explosive-Driven Chopper

. . . cuts 1½-inch lines, cables

Bundles of cables 1½ x 2½-inch or fluid lines as large as 1½ inches diameter can be severed cleanly by the model 174-2-A-1 guillotine chopper. Modifications can be made to accommodate other cable or line sizes.

Chopper blade on this model is driven by a 38-caliber propellant

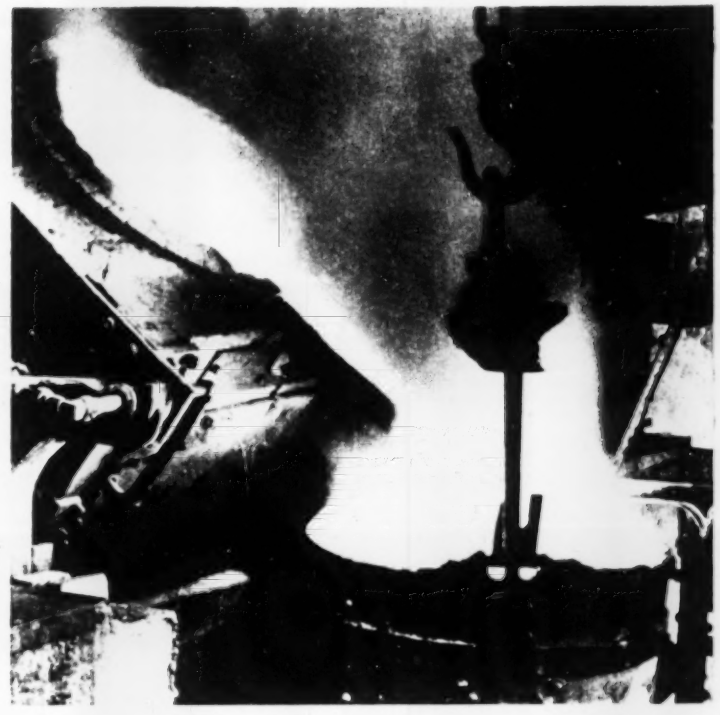
cartridge. The firing pin is actuated remotely by explosive cordeau, ignited electrically from an explosion valve. Beckman & Whitley, Inc., Dept. ST, 965 San Carlos Ave., San Carlos, Calif.

USE REPLY CARD—CIRCLE No. 9

Masonry Drill

. . . for continuous drilling

Hi-Twist drill can be used for continuous drilling of masonry materials as well as copper, brass and other soft metals. A combination



50 TONS of Stainless Steel a Day...

Melted in this AJAX-NORTHRUP INDUCTION FURNACE

Every 1¾ hours, one of these Ajax-Northrup furnaces pours 10,000 pounds of top-quality stainless steel. Total capacity is well over 50 tons a day!

Composition is uniformly exact. Alloying elements are controlled within a fraction of a per cent in every melt. Carbon is consistently kept below 0.05%.

Losses of expensive elements are negligible. Operating costs have been low enough to pay for the furnaces in just a few years!

This installation is typical of the growing use of induction melting for larger and larger jobs. In some of these, induction melting is the only way the job can be done. In others, it does the job better, faster, and at lower cost than any other melting method.

No matter what the job . . . or the quantity . . . Ajax-Northrup's 36 years of induction experience can help you. Just write or call us.

AJAX ELECTROTHERMIC CORPORATION
Ajax Park, Trenton 5, New Jersey

Associated Companies
AJAX ELECTROMETALLURGICAL CORP.
AJAX ELECTRIC FURNACE CORPORATION
AJAX ELECTRIC COMPANY, INC.
AJAX ENGINEERING CORPORATION

AJAX NORTHRUP

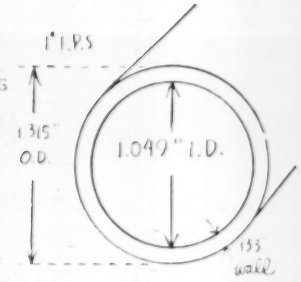
INDUCTION HEATING AND MELTING

Since 1916

148

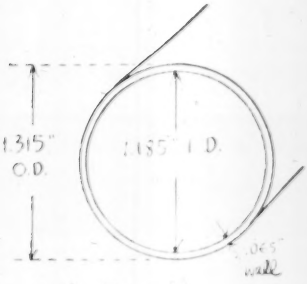
Why pay for Schedule 40 pipe where Schedule 5 is more than adequate ?

Back in the days when iron pipe was virtually the only kind available, it was necessary to specify this



heavy wall Schedule 40

But today with the high strength/weight ratio of stainless steel, the great majority of pipeline and process applications will have an ample margin of safety with this



light wall Schedule 5

All sizes of Carpenter Schedule 5 pipe will easily handle 150 psi working pressures. Sizes under 1½" will safely handle considerably higher pressures.

By specifying this light wall stainless pipe you gain many advantages:

1. You save money. Schedule 5 pipe costs about half as much per foot as Schedule 40.
2. Schedule 5 has the same O.D. as Schedules 10, 40 and 80—for hook-up with existing lines as well as for new installations.
3. Its larger I.D. increases flow and capacity in pipelines, exchangers and other equipment.
4. It's lighter. This means quicker and easier installation.
5. You can save 10% to 25% on valves, fittings, weld rods, etc., because smaller O.D. material can frequently be used.
6. Fittings are available from several manufacturers . . . and stocks of Schedule 5 pipe are carried by conveniently located Carpenter distributors.
7. Tubing sizes can now be replaced with light wall pipe . . . for ready hook-up with standard valves, pumps, etc.

Light wall Schedule 5 pipe saves dollars—and makes a lot of sense!

For complete data on Carpenter Schedule 5 Stainless Pipe, call your nearest Carpenter distributor or write us direct. We'll be glad to send you the information you need. THE CARPENTER STEEL COMPANY, Alloy Tube Division, Union, N. J.

Export Dept.: The Carpenter Steel Co., Port Washington, N.Y. "CARSTEELCO"

THE U.S. NEEDS YOUR STEEL SCRAP NOW

Carpenter

STAINLESS TUBING & PIPE

Analysis · Tolerance · Finish

- guaranteed on every shipment

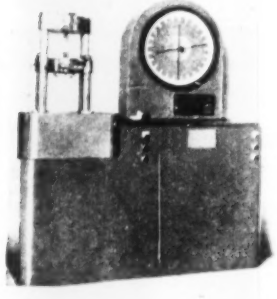
of oval flutes, narrow lands and fast spiral carries dust up and out of the hole as fast as it forms. Sizes range from 11/64 to 1-inch for spiral fluted drills and 1⅛ to 1½-inch for straight fluted drills. Holub Industries Inc., Dept. ST, Sycamore, Ill.

USE REPLY CARD—CIRCLE No. 10

Universal Testing Machine

. . . smaller models introduced

Universal testing machines in 60,000 and 12,000-pound capacity incorporate all features of the manufacturer's larger units. Clear space between columns is increased to 15 inches. Machine has been built as a single unit. Separate framework for the gage panel prevents



shock of breaking specimens from being transmitted to the load indicator.

Both machines are available with either of two indicator types: The first has two 16-inch diameter Emery indicator dials; the second, a Tate Emery indicator with three ranges on a single 24-inch dial. Baldwin - Lima - Hamilton Corp., Dept. ST, Philadelphia 42, Pa.

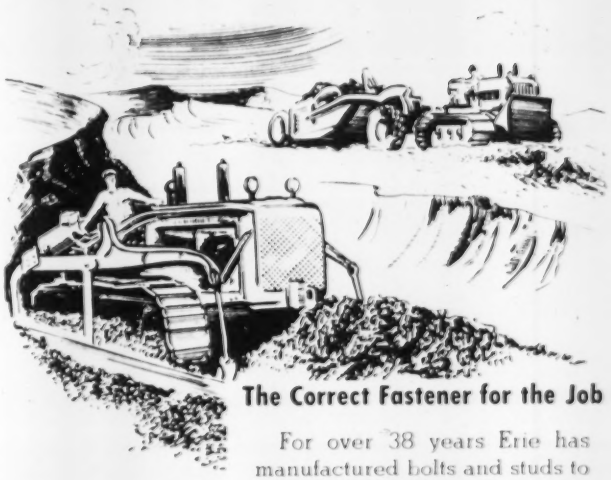
USE REPLY CARD—CIRCLE No. 11

Dual-Purpose Exhaust

. . . supplies coolant, saves dust

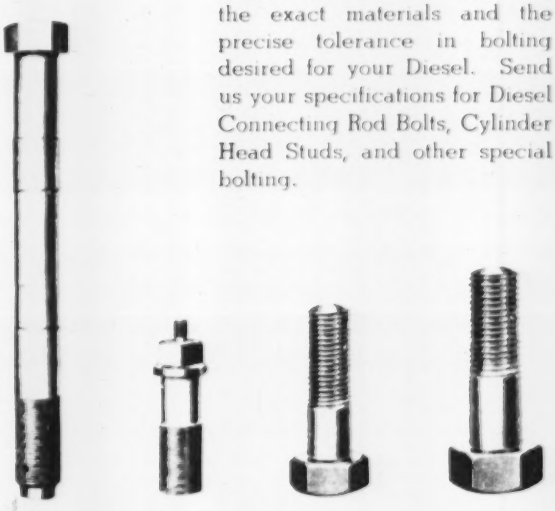
This dual - purpose exhausting machine first supplies coolant to grinding wheel, then collects maximum amount of diamond dust for reclaiming. Accurately - controlled coolant flow is directed to the center of the grinding wheel, assuring even distribution and increasing wheel life. All excess coolant is immediately sucked into a hood

For DEPENDABILITY
IN CONSTRUCTION EQUIPMENT



The Correct Fastener for the Job

For over 38 years Erie has manufactured bolts and studs to the specifications of Diesel Engine builders. This specialized experience gained in working with leading Diesel designing engineers assures you of getting the exact materials and the precise tolerance in bolting desired for your Diesel. Send us your specifications for Diesel Connecting Rod Bolts, Cylinder Head Studs, and other special bolting.



Barium

ERIE BOLT and NUT CO.
ERIE • PENNSYLVANIA

Representatives in Principal Cities.

HOW DO YOU CLEAN BIG METAL PARTS?
HOW DO YOU STRIP PAINT OFF THOSE LARGE STEEL SHEETS?
HOW DO YOU KEEP YOUR EQUIPMENT SO CLEAN?
I USE AN OAKITE STEAM GUN FOR ALL THE HARD JOBS. IT SAVES TIME AND MONEY

This happy man has found the answer to all the tough cleaning problems.

He knows the best way to clean metal parts that are too large to be soaked in tanks or conveyed through washing machines.

He knows the best way to strip paint from large parts and large surfaces that can't be soaked.

He knows the best way to clean large equipment such as:

- die casting machines
- wire drawing machines
- blooming mill rollers and cutters
- hoisting machinery
- brass reduction machines
- millers and grinders
- buffing machines
- forge hammer parts
- drill presses
- stamping machines
- motors

He knows his Oakite Steam Gun will do practically every cleaning job that's too big or too difficult to do by ordinary methods.

FREE For your copy of "*Time saved with Oakite steam-detergent cleaning*" write to Oakite Products, Inc., 34E Rector St., New York 6, N. Y.

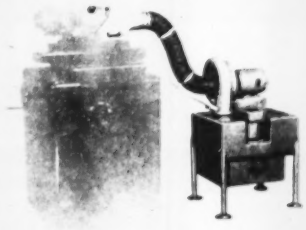
SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE

Technical Service Representatives in Principal Cities of U. S. & Canada

NEW PRODUCTS and equipment

easily attached and adjusted to the correct position for grinding machine setup.

An auxiliary spray built into the hood keeps exhaust hose and fan



flushed clean to insure efficient continuous operation. Collector pan is located conveniently on the bottom of the machine for collecting the sludge from which diamond dust can be reclaimed. Shelboerg Mfg. Co., Dept. ST, 29 Ridgeview Dr., Indianapolis, Ind.

USE REPLY CARD—CIRCLE No. 12

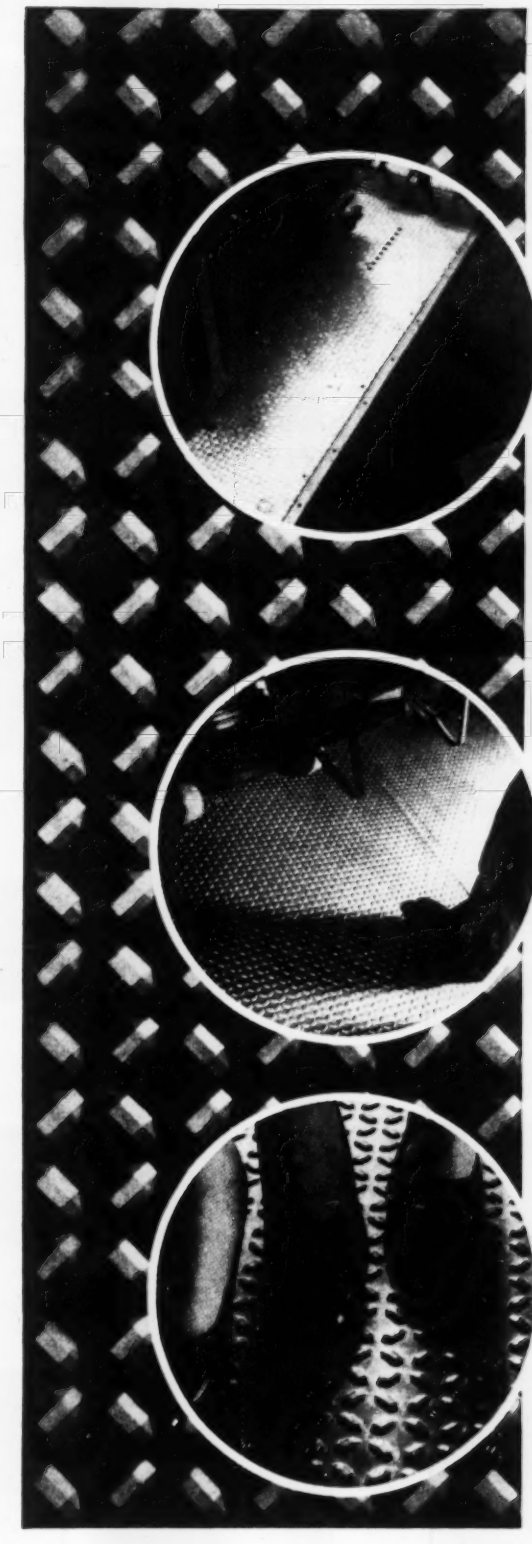
Controlled-Power Press

. . . continuous impact adjustment

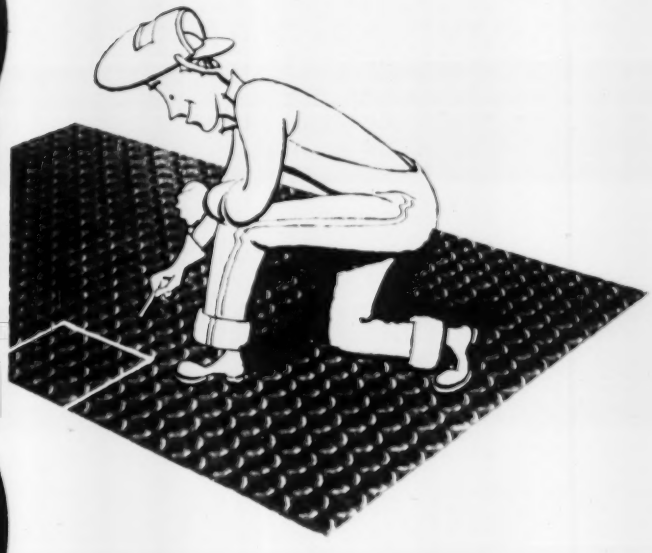
This bench-type air and spring-powered press is redesigned to provide high-speed operation, precise power control and a high degree of operator safety. The model RR-7 provides continuous adjustability of impact from 0 to 12,000 pounds,

and of squeeze up to 12 times airline pressure. Either a pedal release or two-hand safety release can be used.

When used with the air-operated slide feed, the operator's hands never approach the danger area.



You can cut and join this floor plate to any shape you need,
And Multigrip will fabricate with utmost ease and speed;
For Multigrip is so designed to make the sections match
Placed end to end, or side to side, or in a side-end patch . . .
The pattern that is formed will be the same from all directions,
And Multigrip needs fewer joints for it comes in bigger sections!



EASY FABRICATION. The symmetrical pattern of U·S·S Multigrip Floor Plate allows neat, continuous installations and keeps cutting waste to a minimum. Available in long, wide sections, it reduces installation costs where large areas are to be covered.

Slip-proof Multigrip provides firm, sure footing for workers and positive traction for vehicles. The scientifically-designed risers feel comfortable underfoot . . . tend to lessen fatigue. The lozenge-shaped, evenly-spaced risers are at right angles to one another . . . form no pockets to catch dirt, grease and water, no gutters to trap vehicle wheels.

For entire factory floors or steps and platforms of machinery, for safety's sake use Multigrip, the non-skid, permanent floor plate.

UNITED STATES STEEL CORPORATION, PITTSBURGH
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, CHICAGO
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S
multigrip
FLOOR PLATE

Sold by leading distributors from coast to coast

3-85

UNITED STATES STEEL

Potential press speed is in excess of 100 strokes per minute. Absence of rebound makes the unit applicable for delicate marking operations. Winter Products Inc., Dept. ST, Box 3112 Barnum Station, Bridgeport 5, Conn.

USE REPLY CARD—CIRCLE No. 13

Air Cartridge Unit

. . . for single, multiple gaging

This air cartridge unit can be used with the manufacturer's single and multiple-station fixture-

type gages in the same manner as dial indicators. Practical applications include checking such factors as squareness, height, contour and concentricity. Internal and external average diameters can also be checked.

Unit consists of a plunger with a contact point on one end and a stainless steel ball on the other, operating with axial movement in the cartridge body. Contact of only 3 ounces is all that is required to operate the unit. Pratt & Whitney, division of Niles-Bement-Pond Co., Dept. ST, W. Hartford 1, Conn.

USE REPLY CARD—CIRCLE No. 14

Direct Measuring Density Gage

. . . radioactivity is the key

Gage provides simple, direct method for measuring unusual process variables, where density is a function of measurement desired. Penetration power of radioactivity is employed to make possible measurements previously considered impractical or impossible.

Liquid level and interface liquid level, surface films, specific gravity, unit weight per unit area, gas or liquid composition are several of the variables that can be measured by this null system of measurement. Many installations can be made without need for connections to process piping or vessels.

Basis for gage is the Ohmart cell, in which radioactive energy is converted directly into electrical energy, eliminating need for high voltage power supply. Ohmart Corp., Dept. ST, 2317 Ferguson Rd., Cincinnati 38, O.

USE REPLY CARD—CIRCLE No. 15

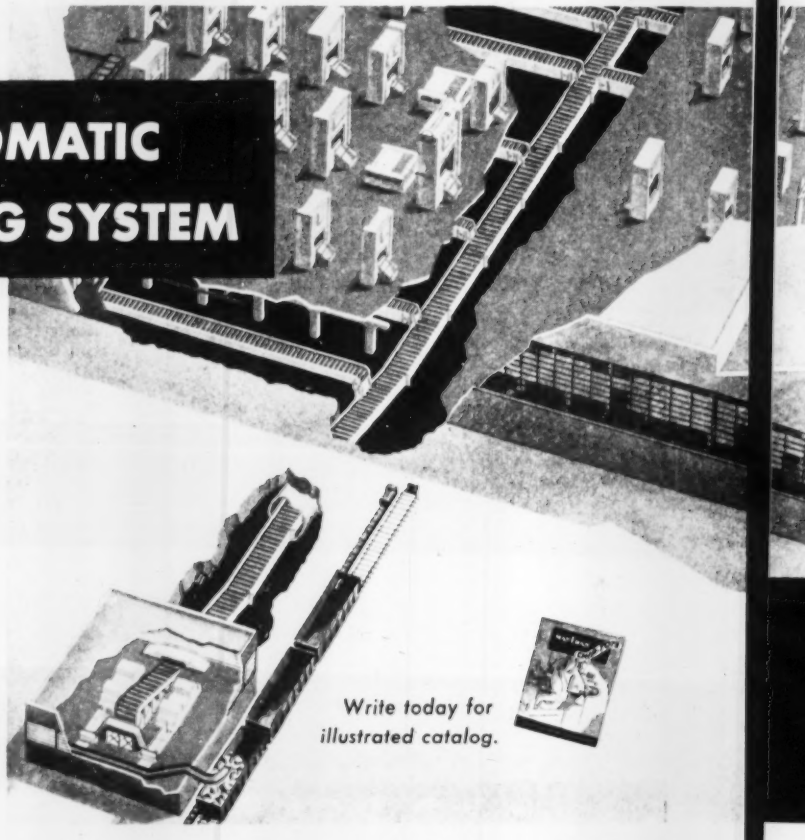
Redesigned Sprinkler Head

. . . effective discharge pattern

Sprinkler head is redesigned to provide an effective distribution pattern and water break-up at the desired rates of flow. Discharge pattern becames solid, extending laterally and downward.

Device is available in two styles: Upright, for exposed piping installations; pendant for installations involving concealed piping. Discharge waterway and oper-

MAY-FRAN AUTOMATIC SCRAP HANDLING SYSTEM



Solves scrap disposal problem for large automotive manufacturer

World's largest automatic scrap handling system engineered by **MAY-FRAN** can handle one million pounds of scrap per day . . . one man controls all operations! Twenty conveyors collect scrap from presses . . . transfer it to the 1145-foot main conveyors . . . then scrap is conveyed to baler house where it is compressed into bales and discharged into automatically indexed freight cars on siding. Entire system is operated from a single control station.

Write today for illustrated catalog.

ating mechanisms are identical with previously approved sprinklers. Modifications in design of frame and deflector are made only to gain more efficient use of water. Automatic Sprinkler Corp. of America, Dept. ST, Jones & Brittain Sts., Youngstown, O.

USE REPLY CARD—CIRCLE No. 16

Protective Coating

. . . for cold application

A sprayable, strippable coating, Spray-Strip, is capable of cold application by spray, brush or dip method. It is impervious to acids, alkalies, greases and oils and offers good protection against vapors and abrasion. Eagle Chemical Co., Dept ST, Industry Ave., Joliet, Ill.

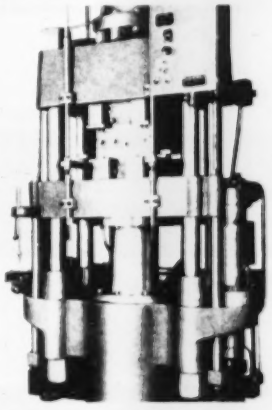
USE REPLY CARD—CIRCLE No. 17

Hydraulic Press Line

. . . new firm in field

Expansion of operations to include production of a hydraulic press line is reported by this manufacturer. Press features will include such factors as self-contained fast traverse, governed pressures, top or bottom transfer, with semi-automatic pressure controls.

Pressure range is from 200 to



400 tons. Logan Engineering Co., Dept. ST, 4901 W. Lawrence Ave., Chicago 30, Ill.

USE REPLY CARD—CIRCLE No. 18

Electrode Holder

. . . gives cool operation

A 40-amp insulated electrode holder, the Cooltong, will handle electrodes from $\frac{1}{8}$ to $\frac{5}{16}$-inch in size and has a wide opening to permit fast release of stubs. The nose is a special sandwich construction consisting of a copper core between four and six layers of laminated, glass impregnated, plastic cloth. Lincoln Electric Co., Dept. ST, Cleveland 17, O.

USE REPLY CARD—CIRCLE No. 19

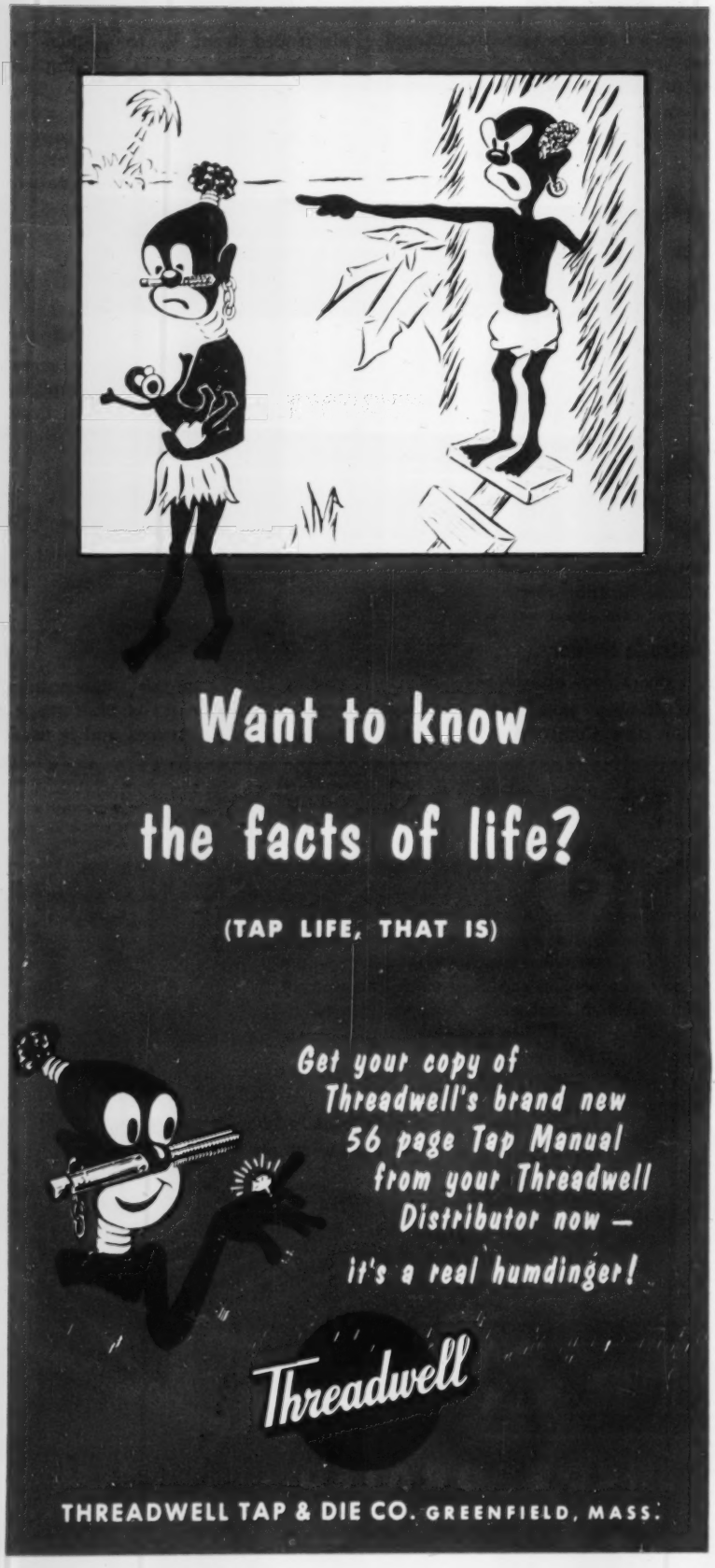
Infrared Radiation Meter

. . . measures to 10w per sq. in.

This infrared meter measures radiant-energy intensities up to 10w per square inch. Called type

DW-69, the meter determines rapidly the intensity of high range, radiant-energy sources and is used

Plant-wide system or Single unit
Whether you need a complete plant-wide system or a single scrap handling unit, MAY-FRAN can meet your requirements. Conveyors of any size can be supplied using the unique MAY-FRAN hinged-steel belting. Speed-up production . . . eliminate manual handling . . . reduce scrap handling costs with a MAY-FRAN system!
MAY-FRAN
ENGINEERING, INCORPORATED
1725 CLARKSTONE ROAD • CLEVELAND 12, OHIO



NEW PRODUCTS and equipment

for studies of infrared radiation effects concerning material absorption and transmission property.

Typical applications for the pocket-size meter include elimination of drying-lamp field distribution and aiding quality control of products that require infrared processing. No separate thermopile or other accessory equipment is needed. General Electric Co., Dept. ST, Schenectady 5, N. Y.

USE REPLY CARD—CIRCLE No. 20

Pedestal Tool Grinder

. . . keyed to operating ease

Plenty of room around the grinding wheels, operation with almost no vibration and good dust protection are design characteristics of this pedestal tool grinder. Unit

is built with 8-inch grinding wheels and $\frac{1}{2}$-hp motor, or with 10-inch wheels and $\frac{3}{4}$-hp motor.

Motor is mounted in the pedestal, providing easier movement by the operator around each grinding wheel and gaining protection for the motor from abrasive dust. Wheel spindle runs on sealed ball bearings. These combine with the fully-enclosed V-belt drive to produce a vibration-free running con-

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TEAR OUT CARD, FILL IN and MAIL TODAY!

69. Corrosionproof Linings

U. S. Stoneware Co. — Physical forms, physical properties, and how and where to apply Tygon corrosion resistant linings are discussed in a practical manner in 12-page illustrated bulletin TL-526. Tables list resistance of this coating to various chemicals. Methods of preparation, application, maintenance and repair of mechanical damage are presented.

70. Savings with Platecoils

Kold-Hold Mfg. Co. — 20-page brochure shows "How Platecoils Have Replaced Pipe Coils at a Savings Throughout Industry." Among reasons for savings are low initial cost, up to 50 per cent faster heating or cooling and low space requirements.

71. Wet Blast Finishing

American Wheelabrator & Equipment Corp. Die and mold finishing and maintenance, tool finishing and deburring heat treatment scale removal and surface preparation for plating are some of the applications for wet blasting which are described in detail in 6-page illustrated bulletin 43.

72. Magnesium Finishing

Dow Chemical Co., Magnesium Dept. 128-page illustrated revised manual "Magnesium Finishing" has detailed descriptions of surface stability and treatment, including mechanical finishing, chemical treatments, electroplating, painting and assembly protection. Alloy die castings, sand and permanent mold castings and sheet, plate and extrusions are covered.

73. Overhead Handling

American Monorail Co. 12-page illustrated bulletin AD-1 is devoted to the applications, construction and operation of automatic dispatch systems composed of MonoRail trackage systems, automatically controlled Monotractor, electric hoist, load carrying accessories and station selectors. Loads are picked up, carried and discharged automatically.

74. Spring Steel

Lapham Hickey Co. 8-page illustrated "Stock List" covers complete line of tempered and annealed spring steel. Prices, weights and sizes are given on blue tempered and polished black oil tempered, feeler gage, cold rolled annealed, with hot rolled floor annealed spring steel stock.

75. Electric Pallet Truck

Automatic Transportation Co. The new Transveyor line of riding-type pallet trucks is covered in 4-page illustrated bulletin EPE-4. Designed for close-quarter, arrow-aisle operation, this electric powered unit is rated 4000 lb with 48-in. long loads.

76. Spintesting Units

Warren Brothers Roads Co., Mfg. Div.—Vacuum high speed testing unit for testing rotating parts at speeds up to and even exceeding 100,000 rpm is subject of descriptive 4-page bulletin. Parts most commonly spintested are fan impellers, turbine rotors, compressor rotors, accessory turbines and gyros.

77. Products & Services

Now in its third edition, illustrated book "Products and Services of American Cyanamid Co. for Industry and Agriculture" contains a listing and description of products and services available to these fields.

78. Shapers

Cincinnati Shaper Co. 36-page illustrated catalog N-5 on Cincinnati shapers gives data on 25 machine tools in ten sizes and five types of any capacity for practically any service. Special equipment for obtaining peak production with these tools is detailed. Also mentioned briefly are All-Steel shears and press brakes.

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79. Grinders & Grinders

Besly-Welles Corp.—Disk, double spindle, radial head face and other grinding machines and accessories as well as Besly-Titan abrasive disks and wheels in 6 to 72-in. diameters are described thoroughly in 80-page illustrated 1953 catalog. Production machines for the generation of flat surfaces are covered.

80. Flexible Hose Tubing

American Brass Co.—16-page illustrated "quick reference" catalog, designated as CC-100, describes American flexible metal hose and tubing. Seamless and strip wound types described are available in a wide range of alloys and sizes. Application and fittings data are included.

81. Pickling & Heat Treating

Clark E. Gordon, Inc.—Practically any cast, extruded, forged or fabricated product that requires pickling or heat treating can be handled by Clagor equipment that is described in 12-page illustrated catalog.

82. Bushings & Bushings, etc.

Acme Industrial Co.—If you're looking for data on drill jig bushings, dowel pins and liner and leader pins and bushings by all means send for 24-page illustrated catalog No. 10-6-52. Printed in easy-to-follow form, it features ASA and Acme standards, for a complete range of types and sizes.

83. Vibration Control

Felters Co.—"Why It Pays to Anchor Your Machines with Unisorb" is 20-page illustrated booklet on machine anchoring material which controls transmitted vibration and noise. Covered are installation materials, system's advantages and application to various machines, including lathes.

84. Center-Break Switches

Delta-Star Electric Co.—High pressure contacts with independently sprung contact shoes are incorporated in PMK 22 and PMK-23 horizontal center-break switches, described and illustrated in publication 5205. Drawings, diagrams and tables for the upright and or inverted mounting switches are included.

85. Gas Burners

Selas Corp. of America—Multiport flame type gas burners for use in heat processing such as high temperature brazing; glass fire polishing; heating solder pots, ovens and die molds; soldering; baking; tempering and hardening are the subject of 4-page illustrated bulletin SC-1000. Burner capacities range up to 64,500 Btu per hr.

86. Explosionproof Motors

Louis Allis Co.—Line of explosionproof motors is described in illustrated 12-page bulletin 800. Special built-in features, typical uses and many of the various electrical and mechanical modifications are shown.

EDITORIAL REPRINTS:

87. Raising Castings Output

With squeezer machines molding both halves of the mold at the same time plus a few other changes in their facilities, Baldwin-Lima-Hamilton Corp. stepped up its deliveries of small and medium-sized castings 220 per cent. The illustrated story is in STEEL reprint "Foundry Facilities Molded to Production."

88. Continuous Forging

Coordinated American and British design work is paying off for Taylor Bros. & Co. Ltd., of England. Plant is producing 21 to 50-in. diameter railway wheels at a continuous rate of 60 pieces per hour from a single-heat remote-controlled process. Layout of the plant, plus the full story is contained in STEEL reprint "Continuous Forge Rolls Up Wheel Records."

89. Nondestructive Testing

Intelligent industrial management doesn't employ any process unless it more than pays its way. In STEEL reprint "Testing Brightens Profit Picture", W. E. Thomas, Magnaflux Corp. Vice President, gives the economic justification for nondestructive testing and shows value of these operations in boosting earnings.

90. Conveyor Ups Press Output

"Conveyor Boosts Press Operations" is title of STEEL reprint by L. Boarts and E. Searcy which relates how North American Aviation Inc. increased by 48 per cent the production of one of their rubber pad forming presses by synchronizing a conveyor into the press cycle. Press is a 2000-ton Birdsboro three-column hydraulic built by Convair.

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dition. Two concealed lamps in each shield provide ample light. South Bend Lathe Works, Dept. ST, 425 E. Madison St., South Bend 22, Ind.

USE REPLY CARD—CIRCLE No. 21

Heavy-Duty Pneumatic Drill

. . . continuous maximum power

Lightweight, compact model PD-304P pneumatic drill is specifically constructed for heavy-duty operation with maximum power on continuous runs. Contoured pistol grip, trigger throttle and built-in speed regulator combines for easy handling. Model has its own built-in oiler and parts move on precision ball bearings.

The drill weighs 3 pounds, is 6-13 32 inches long, 2-1 16 inches wide and 6½ inches high. It comes with ¼-inch Jacobs chuck, key, wrench, hydraulic fitting, ¼ x 8-inch air hose and lubricant. Mall Tool Co., Dept. ST, 7725 S. Chicago Ave., Chicago 19, Ill.

USE REPLY CARD—CIRCLE No. 22

Low-Temperature Testers

. . . range: 10 to 70 F

Practical low-temperature testing for any size laboratory or test department is the function of the XV-70 series industrial chilling machines. Units will hold any temperature from 10 to 70 F. Thermal capacity is 500 Btu per hour. Motor compressor is hermetically sealed.

Model is available in chamber sizes from 5 to 1.5 cu ft. Chamber wall is 3 16-inch steel and counterbalanced lid is employed. Sub-Zero Products Co., Dept. ST, 3930 Reading Rd., Cincinnati 29, O.

USE REPLY CARD—CIRCLE No. 23

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FORMING FACTS

72% SAVING IN METAL!
80% INCREASE IN PRODUCTION!
UNIQUE BALANCE CO. INC.

Typical results by every user of

NILSON 4-SLIDE

Wire and Ribbon Metal FORMING MACHINES

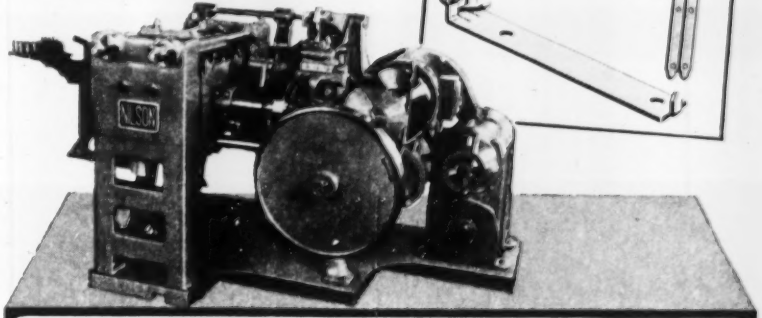
Plants from coast-to-coast are setting new production records with NILSON 4-SLIDE MACHINES . . . and experiencing tremendous economies and greatly improved quality.

Are you confronted with a keen competitive situation? Take the advice of hundreds of plant supervisors . . . install NILSON MACHINES and enjoy these economies *at once.*

NILSON combination press and 4-SLIDE forming machines take the stock directly from the coil — feed, straighten, pierce, blank, swage, stamp, coin — perform up to 5 forming operations and cut off . . . all in one quick, precise operation AUTOMATICALLY!

USING A NILSON COMBINATION PRESS AND 4-SLIDE FORMING MACHINE

Unique Balance Co., Inc. (one of the largest manufacturers of sash balance equipment), now produces 71,532 more parts out of the same amount of steel, compared to their former method. Production speeds increased from 100 to 180 pieces per minute.



For specific recommendations, send prints or samples of your operation when requesting bulletin.

THERE'S NOTHING LIKE A NILSON

THE A. H. NILSON MACHINE CO.
1512 RAILROAD AVE. BRIDGEPORT, CONN.

Automatic Chain-Making Machines • Automatic Staple Forming Machines • Wire and Stock Reels • Foot Presses • Wire Straightening Equipment • Slide Feeds for Presses

FEDDERS ROOM AIR-CONDITIONERS

GET LASTING ENAMEL ADHERENCE

. . . and adherence of baked synthetic enamel finishes is extremely important to Fedders-Quigan Corporation, Buffalo, New York, manufacturers of Room Air Conditioners.

Parts of these units are often subjected to a constant flow of moist and humid air. Approximately 50 percent of the shell is exposed to the atmosphere. Because of high vulnerability to rust and corrosion, it is essential that the exposed surfaces not only "take" but also tenaciously *hold* the attractive finishes that are applied.

For these reasons, Republic Electro Paintlok is used for the shell, mounting brackets, fan shrouds, bulkheads and covers of the Fedders Room Air Conditioners.

Republic Electro Paintlok facilitates manufacturing operations, too. The tight zinc coating will not crack, peel or flake during normal fabrication. Special chemical treatment gives the zinc coating an inert, non-metallic surface which is absorbent in character; a prime condition for painting.

Get the full story of product improvement with Electro Paintlok. Write for the colorfully detailed Republic Booklet 525. Address:

REPUBLIC STEEL CORPORATION
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REPUBLIC STEEL

ELECTRO ZINC PLATED SHEETS
Electro Paintlok® • Electro Zincbond

Other Republic Products include Carbon, Alloy and Stainless Steels — Sheets, Strip, Plates, Bars, Pipe, Tubing, Bolts and Nuts, Wire

The Market Outlook

WHEN you wonder why steel demand continues so strong, look at the automobile industry.

The nation's biggest consumer of finished steel (it uses one-fifth of the output), the U. S. auto industry is aiming to produce 486,000 passenger cars in February, a short month. In the long month of January, the output was only 465,745 units. The February projection even tops the 1952 high of 479,938 in October.

Such an ambitious projection takes a lot of steel.

NEAR A PLATEAU—The pressure of demand for automotive steel should level out, however, this month, for auto production should have attained its full stride. In preparation for this production push, the auto industry had been intensifying its demand for steel.

Helping soften the blow of this intense demand from the auto industry is the growing steel production, made possible by the expansion in steelmaking capacity. In January, more raw steel was produced than in any previous month, the American Iron & Steel Institute reports. Output was 9,888,000 net tons of steel for ingots and castings. That is equivalent to an annual production of 116.4 million net tons. Record for annual output was 105.2 million tons in 1951. In setting the new monthly record, the industry's steelmaking furnaces operated at an average of 99 per cent of capacity.

FAST PACE—High steel production is continuing. In the week ended Feb. 14, steelmaking furnaces were operated at 99.5 per cent of capacity. This is a 2-point recovery from the preceding week when a five-day strike hit a Chicago district steel producer. Though it was brief, that strike was costly to users of bars for civilian purposes. Of all products, bar rolling schedules were hit hardest. Customers for some sizes of bars have been notified delivery dates must be delayed a month.

TIGHT SQUEEZE—The heavy demand the auto industry is exerting for steel is putting a tight squeeze on the sheet supply. With sheet demand far exceeding the supply, some users of hot-rolled and cold-rolled sheets are attempting to help themselves by agreeing to take commercial grade instead of hot-topped material. Hot topping requires additional processing and reduces mill yield. Substitution can't be made in all instances but there are numerous border-line cases where it can.

While hot-rolled and cold-rolled sheets cannot keep up with demand, galvanized sheets are becoming easier to get, especially in the lighter gages, 26 and 28. Enameling stock and silicon sheets are in strong demand.

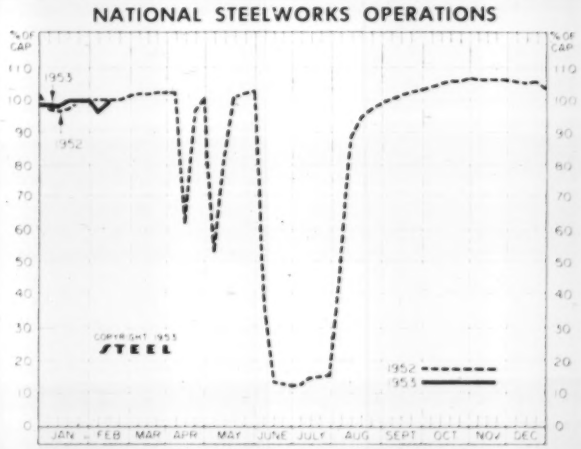
A NEW STAINLESS — Chrome-nickel stainless sheets will be hard to get for some time because of the likelihood of a continued tight government control on nickel. Jet engines and atomic energy installations require so much nickel-bearing stainless steel that very little nickel can be allotted to civilian uses. To overcome this handicap, steel producers and some consumers are experimenting with a new type stainless steel—a manganese-chromium stainless called TRC. In its composition are 16 per cent manganese, about 15 per cent chromium and only 1 per cent nickel.

PRICE CONSCIOUS—Heavy and wide steel plates continue in strong demand, but consumers are less willing to pay premium prices for them.

Shops fabricating structural steel are pinched for certain sizes of material, although over-all inventory of plain material is substantial. Some fabricators are buying foreign steel at prices slightly below domestic steel.

CONTRASTS—While some steel products are in very strong demand, others are less so, and in some cases the supply exceeds demand. That typifies the situation at warehouses, distributors of one-fifth of the nation's steel. While warehouses have good supplies of some products, they still cannot get enough of the products that are in strong demand. There's encouragement for them, though. Their receipts from mills are steady.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Feb. 14	Change	Same Week 1952	Same Week 1951
Pittsburgh	106	0*	101.5	99.5
Chicago	101†	-9*	101.5	101
Mid-Atlantic	97†	0	99	99.5
Youngstown	106	0	102	106
Wheeling	100.5†	-5	99	97
Cleveland	103†	-5*	97.5	86.5
Buffalo	106.5	-5	104	104
Birmingham	97†	1	104	100
New England	85†	4	88	90
Cincinnati	93	0	90	102
St. Louis	93.5	12	77.5	95
Detroit	100.5	1	101.5	108
Western	109	1	104	100.5
Estimated national rate	99.5	+2	100	99

*Change from preceding week's revised rate.
†Estimated rates are based on Jan. 1, 1953, capacities; others, on Jan. 1, 1952, capacities.
Weekly steelmaking capacity is estimated at 2,254,459 net tons in 1953; 2,077,040 tons in 1952; 1,999,034 tons in 1951.

The Metalworking Outlook—p. 35 Production Engineering News—p. 71 139

Composite Market Averages

FINISHED STEEL PRICE INDEX, Bureau of Labor Statistics	Feb. 10 1953	Feb. 3 1953	Month Ago	January Average
1947-49 = 100	130.5	130.6	130.7	130.7

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended Feb. 10, 1953

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see insert following p. 25, STEEL, Sept. 1, 1952.

Basic	$3.725	Sheets, C.R. carbon	$3.275
Black spikes	5.600	Sheets, galv.	6.850
Track bolts	5.700	Strip, C.R. carbon	5.100
Tie plates	4.025	Strip, C.R. stainless (lb)	0.325
Joint bars	4.925	Pipe, black, butt-weld (100 ft)	7.690
Plates, carbon	4.150	Pipe, galv., butt-weld (100 ft)	9.775
Structural shapes	4.200	Boiler tubes (100 ft)	31.063
Bars, hot-rolled (lb)	4.600	Tin plate (100 lb base box)	8.500
Bars, 4120 alloy	6.525	Terne plate (100 lb base box)	7.740
Bars, stainless (lb)	0.435	Wire, carbon, merchant	6.925
Bars, carbon	4.150	Wire, fence, galv.	6.425
Bars, reinforcing	4.050	Nails (100-lb kegs)	7.410
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spools)	5.850
Sheets, H.R. carbon	4.125	Woven wire fence (20-in. rolls)	11.625

FINISHED PRICE INDEX, Weighted Calculated by STEEL*	Feb. 12 1953	Week Ago	Month Ago	Year Ago	5 Yrs Ago
Index (1935-39 av. = 100)	191.31	191.31	191.31	171.92	134.56
Index in cents per lb	4.912	4.912	4.912	4.414	3.454

ARITHMETICAL PRICE COMPOSITES Calculated by STEEL*					
Finished Steel, NT	$110.78	$110.78	$110.78	$106.32	$78.58
No. 2 Fdry. Pig Iron, GT	55.04	55.04	55.04	52.24	39.59
Basic Pig Iron, GT	54.66	54.66	54.66	52.16	39.219
Malleable Pig Iron, GT	56.77	56.77	56.77	53.27	40.30
Steelmaking Scrap, GT	43.00	43.00	43.00	43.00	40.58

For explanation of weighted index see STEEL, Sept. 16, 1946, p. 94; of arithmetical price composites, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	Feb. 12 1953	Week Ago	Month Ago	Year Ago	5 Yrs Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R., del. Philadelphia	4.302	4.302	4.302	4.224	3.356
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.55	3.55
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.80
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.80
Shapes, del., Philadelphia	4.13	4.13	4.13	3.918	2.968
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.90
Plates, Chicago	3.90	3.90	3.90	3.70	2.90
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.45
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.65
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60-75	2.80
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.71
Sheets, Galv., Pittsburgh	4.075	4.075	4.075	3.80	2.95
Strip, H.R., Pitts.	3.975-4.225	3.975-4.225	3.975-4.225	3.75-4.00	2.80
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.80
Strip, C.R., Pittsburgh	4.10-5.50	4.10-5.50	4.10-5.50	4.65-5.35	3.55
Strip, C.R., Chicago	4.35	4.35	4.35	4.90	3.65
Strip, C.R., Detroit	4.30-6.05	4.30-6.05	4.30-6.05	4.85-5.60	3.71
Wire, Basic, Pitts.	4.425-4.725	4.425-4.725	4.425-4.725	4.85-5.10	3.775
Nails, Wire, Pittsburgh	6.35	6.35	6.35	5.90-6.20	4.20
Tin plate, box, Pittsburgh	$8.95	$8.95	$8.95	$8.70	$6.70

SEMIFINISHED					
Billets, forging, Pitts. (NT)	$70.50	$70.50	$70.50	$66.00	$46.50
Wire rods, 5/8" Pitts.	4.425	4.425	4.425	4.10-30	3.175

PIG IRON, Gross Ton					
Bessemer, Pitts.	$55.00	$55.00	$55.00	$53.00	$40.00
Basic, Valley	54.00	54.00	54.00	52.00	39.00
Basic, del. Phila.	59.25	59.25	59.25	56.61	42.004
No. 2 Fdry., Pitts.	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry., Chicago	55.00	55.00	55.00	52.50	39.00
No. 2 Fdry., Valley	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry., del. Phila.	59.75	59.75	59.75	57.11	42.504
No. 2 Fdry., Birm.	54.38	54.38	54.38	48.88	37.38
No. 2 Fdry. (Birmingham) del. Cin.	58.93	58.93	58.93	54.49	40.74
Malleable, Valley	55.00	55.00	55.00	52.50	39.50
Malleable, Chicago	55.00	55.00	55.00	52.50	39.50
Charcoal, Lyles, Tenn.	65.50	65.50	65.50	66.00	43.00
Ferromanganese, Etna, Pa.	225.00	225.00	225.00	188.00	141.00

* Ex-dock, cars, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)					
No. 1 Heavy Melt., Pitts.*	$41.00	$41.00	$41.00	$41.00	$30.50
No. 1 Heavy Melt., E. Pa.	41.00	41.00	41.00	42.00	32.00
No. 1 Heavy Melt., Chicago	42.00	42.00	42.00	42.00	29.25
No. 1 Heavy Melt., Valley	41.00	41.00	41.00	41.00	30.25
No. 1 Heavy Melt., Cleve.	43.00	43.00	43.00	43.00	30.75
No. 1 Heavy Melt., Buffalo	43.00	43.00	43.00	43.00	33.50
Rails, Rerolling, Chicago	52.50	52.50	52.50	52.50	34.75
No. 1 Cast, Chicago	43.00	43.00	43.00	49.00	36.00

* Ex-dock, shipping point.

COKE, Net Ton					
Beehive, Furn. Connlsvl.	$14.75	$14.75	$14.75	$14.75	$12.00-13.00
Beehive, Fdry. Connlsvl.	17.00	17.00	17.00	17.50	14.00-15.50
Oven, Fdry., Chicago	24.50	24.50	24.50	23.00	18.00

PIG IRON

Each furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$56.50	$57.00	$57.50	$58.00
New York, del.		60.78	61.28	
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75
Birmingham District				
Alabama City, Ala. R2	50.88	51.38		
Birmingham, R2	50.88	51.38		
Birmingham, S6		51.38		
Woodward, Ala. W1	50.88	51.38		
Cincinnati, del.		58.93		
Buffalo District				
Buffalo, R2	54.50	55.00	55.50	
Buffalo, H1	54.50	55.00	55.50	
Tonawanda, N.Y. W12	54.50	55.00	55.50	
So. Tonawanda, N.Y. T5		55.00	55.50	
Boston, del.	63.15	63.65	64.15	
Rochester, N.Y., del.	57.92	58.02	58.52	
Syracuse, N.Y., del.	58.62	59.12	59.62	
Chicago District				
Chicago, I-3	54.50	55.00	55.00	55.50
Gary, Ind., U5	54.50		55.00	
Indiana Harbor, Ind. I-2	54.50		55.00	
So. Chicago, Ill., W11	54.50	55.00	55.00	
So. Chicago, Ill., Y1	54.50	55.00	55.00	
So. Chicago, Ill., U5	54.50		55.00	55.50
Milwaukee, del.	56.67	57.17	57.17	57.67
Muskegon, Mich., del.		61.30	61.30	
Cleveland District				
Cleveland, A7	54.50	55.00	55.00	55.50
Cleveland, R2	54.50	55.00	55.00	
Akron, O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain, O., N3	54.50			55.50
Duluth, I-3			55.00	
Erie, Pa., I-3	54.50	55.00	55.00	55.50
Everett, Mass., E1		59.50	60.00	
Fontana, Calif., K1	60.00	61.00		
Granite City, Ill., G1	56.40	56.90	57.40	
St. Louis, del. (exc. tax)	57.15	57.65	58.15	
Ironton, Utah, C11	54.50	55.00		
Geneva, Utah, C11	54.50	55.00		
Lonestar, Tex., L6	50.50	51.00	51.00	
Minnequa, Colo., C16	56.00	56.50	57.00	
Rockwood, Tenn., T5			58.00	
Pittsburgh District				
Neville Island, Pa., P6		55.00	55.00	55.50
Pitts., N.&S. sides, Ambridge				
Aliquippa, del.		56.37	56.37	56.87
McKees Rocks, del.		56.01	56.01	56.51
Lawrenceville, Homestead,				
Wilmerding, Monaca, del.		56.66	56.66	57.16
Verona, Trafford, del.		57.19	57.19	57.69
Brackenridge, del.		57.14	57.14	57.64
Bessemer, Pa., U5	54.50		55.00	55.50
Clairton, Rankin, So. Duquesne, Pa., U5	54.50			
McKeesport, Pa., N3	54.50			55.50
Monessen, Pa., P7	56.50			
Sharpsville, Pa., S6			55.00	55.50
Steelton, Pa., B2	56.50	57.00	57.50	58.00
Swedeland, Pa., A3	55.50	56.00	56.50	56.00
Toledo, O., I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.97	60.47		
Troy, N.Y., R2	56.50	57.00	57.50	58.00
Youngstown District				
Hubbard, O., Y1	54.50	55.00	55.00	
Youngstown, Y1	54.50	55.00	55.00	
Youngstown, U5	54.50			55.50
Mansfield, O., del.	59.15	59.65	59.65	60.15

* Low phos., southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50%, no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton (Base 6.00-6.50% silicon; add $1.50 for each 0.5% Si)	
Jackson, O., G2, J1	$65.50
Buffalo, H1	69.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton	
(Base 11.01-13.50% silicon; add $1 for each 0.5% Si to 15%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.04% max. P)	
Niagara Falls, N.Y., P15	$41.00
Keokuk, Iowa, Openhearth & Fdry., frt. allowed, K2	52.50
Keokuk, OH & Fdry., 12½ lb pigs, 16% Si, frt. allowed, K2	55.50
Wenatchee, Wash., OH & Fdry., frt. allowed, K2	52.50

CHARCOAL PIG IRON, Gross Ton	
(Low phos. semicold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)	
Lyles, Tenn., T1	$65.50

LOW PHOSPHORUS PIG IRON, Gross Ton	
Cleveland, intermediate, A7	$59.50
Steelton, Pa., B2	62.50
Philadelphia, delivered	66.05
Troy, N.Y., R2	62.50

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Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL, Feb. 12, 1953, cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company, key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana Calif. K1 $+1.00
Munhall Pa. U5 +1.00
Seattle B4 +1.00

INGOTS, Alloy (NT)
Detroit R7 $+7.00
Fontana Calif. K1 +1.00
Houston S6 +1.00
Midland Pa. C18 +7.00
Munhall Pa. U5 +7.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer Pa. U5 $+6.00
Clairton Pa. U5 +6.00
Ensley Ala. T2 +6.00
Fairfield Ala. T2 +6.00
Fontana Calif. K1 +7.00
Gary Ind. U5 +6.00
Johnstown Pa. B2 +6.00
Lackawanna N.Y. B2 +6.00
Munhall Pa. U5 +6.00
So.Chicago Ill. U5 +6.00
So.Duquesne Pa. U5 +6.00

Carbon, Forging (NT)
Bessemer Pa. U5 $+6.50
Buffalo R2 +6.50
Canton O. R2 +6.50
Clairton Pa. U5 +6.50
Cleveland R2 +6.50
Conshohocken Pa. A3 +7.50
Detroit R7 +7.50
Ensley Ala. T2 +6.50
Fairfield Ala. T2 +6.50
Fontana Calif. K1 +6.50
Gary Ind. U5 +6.50
Geneva Utah C11 +6.50
Houston S6 +6.50
Johnstown Pa. B2 +6.50
Lackawanna N.Y. B2 +6.50
Los Angeles B3 +6.50
Munhall Pa. U5 +6.50
Seattle B3 +6.50
So.Chicago, Ill. U5, W11 +6.50
So.Duquesne Pa. U5 +6.50
So.SanFrancisco B3 +6.50

Alloy, Forging (NT)
Bethlehem Pa. B2 +6.00
Buffalo R2 +6.00
Canton, O. R2 +6.00
Canton O. T2 +6.00
Conshohocken Pa. A3 +6.00
Detroit R7 +6.00
Fontana Calif. K1 +6.00
Gary Ind. U5 +6.00
Houston S6 +6.00
Ind Harbor Ind. Y1 +6.00
Johnstown Pa. B2 +6.00
Lackawanna N.Y. B2 +6.00
Los Angeles B3 +6.00
Massillon O. R2 +6.00
Midland Pa. C18 +6.00
Munhall Pa. U5 +6.00
So.Chicago, Ill. R2, U5, W11 +6.00
So.Duquesne Pa. U5 +6.00
Struthers O. Y1 +6.00
Warren O. C17 +6.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 +7.00
Canton O. R2 +7.00
Cleveland R2 +7.00
Fontana Calif. K1 +8.00
Gary Ind. U5 +7.00
Massillon O. R2 +7.00
So.Chicago Ill. R2 +7.00
So.Duquesne Pa. U5 +7.00

SHEET BARS (NT)
Fontana Calif. K1 +$4.18

SKELP
Aliquippa Pa. J5 +3.60
Munhall Pa. U5 +3.60
Warren O. R2 +3.60
Youngstown, O. R2, U5 +3.60

WIRE RODS
Alton Ill. L1 4.70
Alabama City, Ala. R2 4.125
Buffalo W12 4.125
Cleveland A7 4.125
Donora Pa. A7 4.125
Fairfield Ala. T2 4.125
Fontana Calif. K1 4.125
Houston S6 4.75
Johnstown Pa. B2 4.125
Joliet Ill. A7 4.125
Kansas City Mo. S6 4.60
Los Angeles B3 4.125
Minnequa Colo. C10 4.125
Monessen Pa. P7 4.125
No. Tonawanda, N.Y. B11 4.125
Pittsburg, Calif. C11 4.175
Portsmouth O. P12 4.125
Roebling N.J. R5 4.125
So.Chicago Ill. R2 4.125
Sparrows Point, Md. B2 4.125
Sterling Ill. N14 4.125
Struthers O. Y1 4.125
Torrance, Calif. C11 4.125
Worcester, Mass. A7 4.60

SHEET STEEL PILING
Ind Harbor Ind. I-2 4.65
Lackawanna N.Y. B2 4.65
Munhal Pa. U5 4.65
So.Chicago Ill. U5 4.65

STRUCTURALS
Carbon Steel Stand. Shapes
Alabama City, Ala. R2 3.85
Aliquippa Pa. J5 3.85
Bessemer, Ala. T2 3.85
Bethlehem Pa. B2 3.90
Clairton Pa. U5 3.85
Fairfield Ala. T2 3.85
Fontana, Calif. K1 4.50
Gary Ind. U5 3.85
Geneva, Utah C11 3.85
Houston S6 4.25
Ind Harbor Ind. I-2 3.85
Johnstown Pa. B2 3.90
Kansas City, Mo. S6 4.45
Lackawanna N.Y. B2 3.90
Los Angeles B3 4.45
Minnequa Colo. C10 4.30
Munhall Pa. U5 3.85
Niles, Calif. c22, P1 4.56
Phoenixville Pa. P4 4.10
Seattle B3 4.50
So.Chicago Ill. U5, W11 3.85
So.SanFrancisco B3 4.40
Torrance, Calif. C11 4.45
Weirton, W.Va. W6 4.10

Wide Flange
Bethlehem Pa. B2 3.90
Clairton Pa. U5 3.85
Fontana, Calif. K1 4.60
Johnstown Pa. B2 3.90
Lackawanna N.Y. B2 3.90
Munhall Pa. U5 3.85
So.Chicago Ill. U5 3.85

Alloy Stand. Shapes
Clairton Pa. U5 4.725
Fontana, Calif. K1 4.950
Gary Ind. U5 4.725
Munhall Pa. U5 4.725
So.Chicago Ill. U5 4.725

H.S., L.A. Stand. Shapes
Aliquippa Pa. J5 5.80
Bessemer Ala. T2 5.80
Bethlehem Pa. B2 5.80
Clairton Pa. U5 5.80
Fairfield Ala. T2 5.80
Fontana Calif. K1 6.45
Gary Ind. U5 5.80
Geneva Utah C11 5.80
Ind Harbor Ind. I-2 5.80
Ind Harbor Ind. Y1 6.30
Johnstown Pa. B2 5.80
Lackawanna N.Y. B2 5.80
Los Angeles B3 6.35
Munhall Pa. U5 5.80
Seattle B3 6.40
So.Chicago Ill. U5 5.80
So.SanFrancisco B3 6.30
Struthers O. Y1 6.30

H.S., L.A. Wide Flange
Aliquippa Pa. J5 5.80
Bethlehem Pa. B2 5.80
Lackawanna N.Y. B2 5.80
Munhall Pa. U5 5.80
So.Chicago Ill. U5 5.80

BEARING PILES
Munhall Pa. U5 3.85
So.Chicago Ill. U5 3.85

PLATES, High-Strength Low-Alloy
Aliquippa Pa. J5 3.95
Bessemer Ala. T2 3.95
Clairton Pa. U5 3.95
Cleveland J5 R2 3.95
Conshohocken Pa. A3 4.20
Ecorse Mich. G5 3.95
Fairfield Ala. T2 3.95
Fontana, Calif. K1 4.60
Gary Ind. U5 3.95
Geneva, Utah C11 3.95
Ind Harbor Ind. I-2 3.95
Ind Harbor Ind. Y1 4.45
Johnstown Pa. B2 3.95
Munhall Pa. U5 3.95
Pittsburgh J5 3.95
Seattle B3 N14 4.85
Sharon Pa. S3 3.95
So.Chicago Ill. U5 3.95
Sparrows Point, Md. B2 3.95
Warren O. R2 3.95
Youngstown Y1 4.45
Youngstown U5 3.95

PLATES, Open-Hearth Alloy
Claymont Del. C22 3.75
Coatesville Pa. L7 3.75
Conshohocken Pa. A3 4.50
Fontana, Calif. K1 4.20
Gary Ind. U5 3.75
Johnstown Pa. B2 3.75
Munhall Pa. U5 3.75
Sharon Pa. S3 3.75
So.Chicago Ill. U5 3.75
Sparrows Point, Md. B2 3.75

FLOOR PLATES
Cleveland J5 4.50
Conshohocken Pa. A3 4.50
Ind Harbor Ind. I-2 4.50
Munhall Pa. U5 4.50
So.Chicago Ill. U5 4.50

PLATES, Ingot Iron
Ashland, Ky. C18, A10 4.15
Cleveland J5 R2 4.50
Warren O. R2 4.50

PLATES, Carbon Steel
Alabama City, Ala. R2 3.90
Aliquippa Pa. J5 3.90
Ashland Ky. C18, A10 3.90
Bessemer Ala. T2 3.90
Clairton Pa. U5 3.90
Claymont Del. C22 4.35
Cleveland J5 R2 3.90
Coatesville Pa. L7 4.35
Conshohocken Pa. A3 4.35
Ecorse Mich. G5 4.45
Fairfield Ala. T2 3.90
Fontana Calif. C10, K1 4.50
Gary Ind. U5 3.90
Granite City, Ill. G4 4.60
Geneva, Utah C11 3.90
Harrisburg Pa. C6 6.50
Houston S6 4.30
Ind Harbor Ind. I-2, Y1 3.90
Johnstown Pa. B2 3.90
Lackawanna N.Y. B2 3.90
Minnequa Colo. C10 4.20
Munhall Pa. U5 3.90
Pittsburgh J5 3.90
Seattle B4 4.40
Sharon Pa. S3 4.15
So.Chicago Ill. U5, W11 3.90
SparrowsPoint, Md. B2 3.90
Steubenville O. W10 3.90
Warren O. R2 3.90
Weirton W.Va. W6 4.20
Youngstown R2, U5, Y1 3.90

PLATES, Carbon A.R.
Fontana Calif. K1 4.70
Geneva, Utah C11 4.60

PLATES, Wrought Iron
(Add 4.7¢ to base and extras)
Economy Pa. B14 8.60

BARS, Hot-Rolled Carbon
Alabama City, Ala. R2 3.95
Aliquippa Pa. J5 3.95
Alton Ill. L1 4.50
Atlanta Ga. A11 4.50
Bessemer Ala. T2 3.95
Buffalo R2 3.95
Canton O. R2 3.95
Clairton, Pa. U5 3.95
Cleveland R2 3.95
Detroit R7 4.10
Ecorse Mich. G5 4.20
Emeryville Calif. J7 4.20
Fairfield Ala. T2 3.95
Fontana, Calif. K1 4.60
Gary Ind. U5 3.95
Houston S6 4.35
Ind Harbor Ind. I-2, Y1 3.95
Johnstown Pa. B2 3.95
Kansas City, Mo. S6 4.60
Lackawanna N.Y. B2 3.95
Los Angeles B3 4.65
Milton Pa. B6 4.60
Minnequa Colo. C10 4.40
N. Tonawanda, N.Y. B11 3.95
Niles, Calif. P1 4.60
Pittsburg, Calif. C11 4.60
Pittsburgh J5 3.95
Seattle B3 N14 4.20
So.Chicago Ill. R2, U5, W11 3.95
So.Duquesne Pa. U5 3.95
So.SanFran. Calif. B3 4.20
Sterling Ill. N14 4.60
Struthers O. Y1 3.95
Torrance, Calif. C11 4.60
Weirton, W.Va. W6 4.10
Youngstown R2, U5 3.95

BAR SIZE ANGLES, S. Shapes
Aliquippa Pa. J5 3.95
Atlanta A11 4.50
Niles, Calif. P1 4.60
San Francisco S7 4.60

BAR SIZE ANGLES, H.R. CARBON
Bethlehem Pa. B2 4.15

BARS, Hot-Rolled Alloy
Bethlehem Pa. B2 4.65
Buffalo R2 4.65
Canton O. R2 4.65
Canton O. T2 4.72
Clairton Pa. U5 4.65
Detroit R7 4.85
Ecorse Mich. G5 4.65
Fontana, Calif. K1 4.75
Gary Ind. U5 4.65
Houston S6 4.65
Ind Harbor Ind. I-2, Y1 4.65
Johnstown Pa. B2 4.65
Kansas City, Mo. S6 4.75
Lackawanna N.Y. B2 4.65
Los Angeles B3 4.75
Massillon O. R2 4.65
Midland Pa. C18 4.65
So.Chicago, R2, U5, W11 4.65
So.Duquesne Pa. U5 4.65
Struthers O. Y1 4.65
Warren O. C17 4.65
Youngstown U5 4.65

BAR SHAPES, Hot-Rolled Alloy
Clairton Pa. U5 4.95
Gary Ind. U5 4.95
Youngstown U5 4.95

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy
Aliquippa Pa. J5 4.95
Bessemer Ala. T2 4.95
Bethlehem Pa. B2 4.95
Clairton Pa. U5 4.95
Cleveland R2 4.95
Ecorse Mich. G5 6.45
Fairfield Ala. T2 4.95
Fontana Calif. K1 6.95
Gary Ind. U5 4.95
Ind Harbor Ind. I-2 4.95
Indiana Harbor Ind. Y1 6.45
Johnstown Pa. B2 4.95
Lackawanna N.Y. B2 4.95
Los Angeles B3 6.65
Pittsburgh J5 4.95
Seattle B3 6.65
So.Duquesne Pa. U5 4.95
So.SanFrancisco B3 6.65
Struthers O. Y1 6.65
Youngstown U5 4.95

BARS, Cold-Finished Carbon
Ambridge Pa. W18 4.95
Beaver Falls Pa. R2 4.95
Beaver Falls Pa. M12 4.95
Buffalo R2 4.95
Camden N.J. P11 5.25
Carnegie Pa. C12 4.95
Chicago R2 4.95
Chicago W18 4.95
Cleveland A7 C26 4.95
Detroit P17, R7 4.95
Donora Pa. A7 4.95
Elyria O. W8 4.95
Franklin Park Ill. N5 4.95
Gary, Ind. R2 4.95
Green Bay, Wis. F7 4.95
Hammond Ind. I-2 M13 4.95
Hartford, Conn. R2 5.25
Los Angeles R2 5.25
Mansfield Mass. R6 5.25
Massillon O. R2, R8 4.95
Monaca Pa. S17 4.95
Newark N.J. W18 5.25
Plymouth Mich. P5 5.25
Pittsburgh J5 4.95
Putnam Conn. W18 5.25
Readville, Mass. C14 5.25
St. Louis Mo. M6 5.30
So.Chicago Ill. W14 4.95
Spring City, Pa. K4 5.25
Struthers O. Y1 4.95
Waukegan Ill. A7 4.95
Youngstown Y1 4.95
Youngstown R3 4.95

BARS, Cold-Finished Alloy
Ambridge Pa. W18 6.00
Beaver Falls Pa. M12 6.00
Bethlehem Pa. B2 6.00
Buffalo R6 6.00
Camden N.J. P11 6.00
Canton O. R2 6.00
Canton O. T2 5.95
Carnegie Pa. C12 6.00
Chicago R6 6.00
Chicago W18 6.00
Cleveland A7 6.00
Cleveland C26 6.00
Detroit P17, R7 6.35
Donora Pa. A7 6.00
Elyria O. W8 6.00
Gary Ind. R2 6.00
Hammond Ind. I-2 M13 6.00
Hartford, Conn. R2 6.35
Lackawanna N.Y. B2 6.00
Mansfield Mass. R6 6.00
Massillon O. R2, R8 6.00
Midland Pa. C18 6.00
Monaca Pa. S17 6.00
Newark N.J. W18 6.25
Plymouth Mich. P5 6.25
So.Chicago Ill. R2, W14 6.00
Spring City, Pa. K2 6.25
Struthers O. Y1 6.00
Warren O. C17 6.00
Waukegan Ill. A7 6.35
Worcester Mass. A7 6.35
Youngstown Y1 6.00
Youngstown R3 6.00

BARS, Reinforcing (Fabricators)
Alabama City, Ala. R2 3.95
Atlanta A11 4.50
Buffalo R2 3.95
Cleveland R2 3.95
Emeryville Calif. J7 4.70
Fairfield Ala. T2 3.95
Fontana, Calif. K1 4.65
Gary Ind. U5 3.95
Houston S6 4.35
Ind Harbor Ind. I-2, Y1 3.95
Johnstown Pa. B2 3.95
Kansas City, Mo. S6 4.60
Lackawanna N.Y. B2 3.95
Los Angeles B3 4.65
Massillon O. R2 4.65
Midland Pa. C18 4.65
So.Chicago, R2, U5, W11 4.65
So.Duquesne Pa. U5 4.65
Struthers O. Y1 4.65
Warren O. C17 4.65
Youngstown U5 4.65

So.Chicago Ill. R2 3.95
So.Duquesne Pa. U5 3.95
So.SanFrancisco B3 4.60
Sparrow Point Md. B2 3.95
Sterling Ill. C11, N14 4.60
Struthers O. Y1 3.95
Torrance, Calif. C11 4.60
Youngstown R2 U5 3.95

BARS, Reinforcing (Fabricated; to consumers)
Huntington W.Va. W7 5.00
Johnstown, 3/4-1" B2 5.20
Kansas City, Mo. S6 4.60
Los Angeles B3 4.45
Marion O. P11 5.20
Seattle B3, N14 5.80
Sand Springs, Okla. S6 4.60
So.SanFrancisco B3 4.45
Sparrows Pt. 3/4-1" B2 5.20
Williamsport Pa. S10 5.35

RAIL STEEL BARS
Chicago Hts. C4, C2 4.25
Chicago Hts. C4, L2 4.25
Franklin Pa. C4, F3 4.25
Fort Worth, Tex. (26) T4 5.10
Huntington W.Va. (3) W7 4.25
Marion O. (3) P11 4.25
Moline Ill. (3) R2 4.05
Tonawanda, N.Y. B12 4.00
Williamsport, Pa. S10 4.25
Wilkes-barre, Pa. S10 4.35

BARS, Wrought Iron
(Add 4.7¢ to base and extras)
Economy Pa. (8 R.) B14 9.60
Economy Pa. (6 R.) B14 11.00
Economy Staybolt B14 12.20
Mc Kees Rocks (Staybolt) Pa. B14 9.60
Mc Kees Rocks (8 R.) Pa. B14 9.60
Mc Kees Rocks (6 R.) Pa. B14 11.00

SHEETS, Hot-Rolled Steel
(In gage and heavier)
Alabama City, Ala. R2 3.75
Ashland, Ky. (18) A10 3.75
Butler Pa. A10 3.75
Cleveland J5 R2 3.75
Conshohocken Pa. A3 4.50
Detroit M1 4.00
Ecorse Mich. G5 3.75
Fairfield Ala. T2 3.75
Fontana, Calif. K1 4.85
Gary Ind. U5 3.75
Geneva, Utah C11 3.85
Granite City, Ill. G4 4.00
Ind Harbor Ind. I-2, Y1 3.75
Irvin Pa. U5 3.75
Lackawanna N.Y. B2 3.75
Munhall Pa. U5 3.75
Niles O. N12 3.75
Pittsburg, Calif. C11 4.85
Pittsburgh J5 3.75
Sharon Pa. S3 3.75
So.Chicago Ill. W14 3.75
Sparrows Point, Md. B2 3.75
Steubenville O. W10 3.75
Torrance, Calif. C11 4.85
Warren O. R2 3.75
Weirton, W.Va. W6 3.75
Youngstown R2 U5 3.75

SHEETS, H.R. (19 gage)
Alabama City, Ala. R2 3.925
Dover O. R1 3.925
Mansfield O. B6 3.95
Niles O. N12 3.95
Torrance, Calif. C11 4.60

SHEETS, H.R. (14 ga. heavier) High Strength Low Alloy
Cleveland J5 R2 3.925
Conshohocken Pa. A3 3.925
Ecorse Mich. G5 3.925
Fairfield Ala. T2 3.925
Fontana, Calif. K1 3.925
Gary Ind. U5 3.925
Ind Harbor Ind. I-2 3.925
Ind Harbor Ind. Y1 3.925
Irvin Pa. U5 3.925
Pittsburgh J5 3.925
Sharon Pa. S3 3.925
So.Chicago Ill. U5 3.925
Sparrows Point (26), B2 3.925
Warren O. R2 3.925
Weirton W.Va. W6 3.925
Youngstown U5 3.925
Youngstown Y1 3.925

SHEETS, Cold-Rolled High Strength Low Alloy
Cleveland J5 R2 3.925
Ecorse Mich. G5 3.925
Fontana, Calif. K1 3.925
Gary Ind. U5 3.925
Indiana Harbor Ind. Y1 3.925
Indiana Harbor Ind. I-2 3.925
Irvin Pa. U5 3.925
Lackawanna (27) B2 3.925
Pittsburgh J5 3.925
Sparrows Point (25), B2 3.925
Warren O. R2 3.925
Weirton W.Va. W6 3.925
Youngstown Y1 3.925

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.575
Cleveland J5, R2	4.575
Ecorse,Mich. G5	4.775
Fairfield,Ala. T2	4.575
Follansbee,W.Va. F4	5.575
Fontana,Calif. K1	5.675
Gary,Ind. U5	4.575
GraniteCity,Ill. G4	5.275
Ind.Harbor,Ind. I-2,Y1	4.575
Irvin,Pa. U5	4.575
Lackawanna,N.Y. B2	4.575
Middletown,O. A10	4.575
Pittsburg,Calif. C11	5.525
Pittsburgh J5	4.575
SparrowsPoint,Md. B2	4.575
Steubenville,O. W10	4.575
Warren,O. R2	4.575
Weirton,W.Va. W6	4.575
WestLeechburg,Pa. A4	5.45
Youngstown Y1	4.575

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	5.075
Ashland,Ky.(8) A10	5.075
Canton,O. R2	5.075
Delphos,O. N16	5.675
Dover,O. R1	5.775
Fairfield,Ala. T2	5.075
Gary,Ind. U5	5.075
GraniteCity,Ill. G4	5.50
Ind Harbor,Ind. I-2	5.075
Irvin,Pa. U5	5.075
Kokomo,Ind.(13) C16	5.475
MartinsFery,O. W10	5.075
Niles,O. N12	6.275
Pittsburg,Calif. C11	5.525
SparrowsPoint,Md. B2	5.075
Steubenville,O. W10	5.075
Torrance,Calif. C11	5.825
Weirton,W.Va. W6	5.075

SHEETS, Galvannealed Steel

Canton,O. R2	5.625
Irvin,Pa. U5	5.625
Kokomo,Ind.(13) C16	6.025
Niles,O. N12	6.825

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.325
Middletown,O. A10	5.325

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.925
Niles,O. R2 (28)	5.925
Weirton,W.Va. W6	5.775

SHEETS, Well Casing

Fontana,Calif. K1	5.34

BLUED Stock, 29 ga.

Yorkville,O. W10	7.00
Follansbee,W.Va. F4	7.10
Follansbee (23) F4	6.425

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.925
Cleveland R2	4.925
Gary,Ind. U5	4.925
GraniteCity,Ill. G4	5.625
Ind.Harbor,Ind. I-2	4.925
Irvin,Pa. U5	4.925
Middletown,O. A10	4.925
Youngstown Y1	4.925

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.25
Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.35

SHEETS, Culvert No. 16

	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.875	....
Canton,O. R2	5.925	6.375
Fairfield,Ala. T2	5.875	6.125
Gary,Ind. U5	5.875	6.125
Ind Harbor I-2	5.875	6.125
Irvin,Pa. U5	5.875	6.125
Kokomo,Ind. C16	6.525	....
MartinsFy.,O. W10	5.875	....
Pittsburg,Cal C11	6.625	....
SparrowsPt. B2	5.875	....
Torrance,Cal C11	6.625	....

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	6.125
Fairfield,Ala. T2	6.125
MartinsFerry,O. W10	6.125

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10	4.025
Cleveland R2	4.375
Ind Harbor,Ind. I-2	4.025
Warren,O. R2	4.375

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10	5.075
Cleveland R2	5.175
Middletown,O. A10	5.075
Warren,O. R2	5.175

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.325
Canton,O. R2	5.825

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.575
Middletown,O. A10	5.575

SHEETS, ALUMINIZED

Butler,Pa. A10	8.425

TIN PLATE, American 1.25 Lb Coke (Base Box)

	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	....
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	....	....
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

SHEETS, SILICON, H.R. or C.R (22 Ga.) COILS (Cut lengths 1/2c lower)

	Field	Armature	Electric	Motor	Dynamo
BeechBottom W10 (cut lengths)	....	....	7.85	9.10	9.90
Brackenridge,Pa. A4	....	....	8.35	9.60	10.40
GraniteCity,Ill. G4 (cut lengths)	....	....	8.55	9.80	....
IndianaHarbor,Ind. I-2	7.55	7.85	(34)	(41)	....
Mansfield,O. E6 (cut lengths)	7.20	7.35	7.85	9.10	9.90
Niles,O. N12 (cut lengths)	7.05	7.35	7.85	....	....
Vandergrift,Pa. U5	....	....	7.85	8.35	9.60	10.40
Warren,O. R2	7.55	7.85	8.35	9.60	10.40
Zanesville,O. A10	....	7.85	8.35	9.60	10.40

SHEETS, SILICON (22 Ga. Base) COILS (Cut Length 1/2c lower)

Transformer Grade	72	65	58	52
Beechbottom W10 (cut lengths)	10.45	11.00	11.70	12.50
Brackenridge,Pa. A4	10.95	....	....	....
Vandergrift,Pa. U5	10.95	11.50	12.20	13.00
Warren,O. R2	10.95	....	....	....
Zanesville,O. A10	10.95	11.50	12.20	13.00

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	15.35	15.85
Vandergrift,Pa. U5	13.50	14.35	15.35	15.85

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10	$5.65

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10	5.475
Gary,Ind. U5	5.475
Mansfield,O. E6	6.05
Middletown,O. A10	5.475
Niles,O. N12	6.275
Weirton,W.Va. W6	5.475

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.875

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.75

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.65
Conshohocken,Pa. A3	5.90
Ecorse,Mich. G5	6.30
Fairfield,Ala. T2	5.65
Fontana,Calif. K1	6.55
Gary,Ind. U5	5.65
Ind.Harb.,Ind. I-2	5.65
Ind.Harbor,Ind. Y1	6.15
Lackawanna,N.Y. B2	5.70
LosAngeles(25) B3	6.40
Seattle(25) B3	6.65
Sharon,Pa. S3	5.65
So.SanFrancisco(25) B3	6.40
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.65
Weirton,W.Va. W6	6.10
Youngstown Y1	6.15
Youngstown U5	5.65

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5	7.45
Cleveland A7	7.30
Dover,O. G6	8.00
Ecorse,Mich. G5	8.15
Lackawanna,N.Y. B2	7.90
Sharon,Pa. S3	7.30
SparrowsPoint,Md. B2	7.90
Warren,O. R2	7.30
Weirton,W.Va. W6	7.95
Youngstown Y1	7.80

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.725
Alton,Ill. L1	4.20
Ashland,Ky.(8) A10	3.725
Atlanta A11	4.275
Bessemer,Ala. T2	3.725
Bridgeport,Con.(10)S15	4.225
Buffalo(27) R2	3.725
Butler,Pa. A10	3.725
Carnegie,Pa. S18	4.225
Conshohocken,Pa. A3	4.125
Detroit M1	4.40
Ecorse,Mich. G5	4.025
Fairfield,Ala. T2	3.725
Fontana,Calif. K1	5.175
Gary,Ind. U5	3.725
Houston,Tex. S5	4.125
Ind.Harbor,Ind. I-2,Y1	3.725
Johnstown,Pa.(25) B2	3.725
KansasCity,Mo.(9) S5	4.325
Lackawanna,N.Y.(32) B2	3.725
LosAngeles(25) B3	4.475
Milton,Pa. B6	4.35
Minnequa,Colo. C10	4.775
New Britain(10) S15	4.225
N.Tonawanda,N.Y. B11	3.725
Pittsburg,Calif. C11	4.475
Riverdale,Ill. A1	3.425
SanFrancisco S7	5.00
Seattle(25) B3	4.725
Seattle N14	4.75
Sharon,Pa. S3	4.225
So.Chicago,Ill. W14	3.725
So.SanFrancisco(25) B3	4.475
SparrowsPoint,Md. B2	3.725
Sterling,Ill. N15	4.725
Torrance,Calif. C11	4.475
Warren,O. R2	3.725
Weirton,W.Va. W6	3.825
WestLeechburg,Pa. A4	3.975
Youngstown U5, Y1	3.725

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	6.05
Carnegie,Pa. S18	6.45
Fontana,Calif. K1	7.30
Gary,Ind. U5	6.10
Houston,Tex. S5	6.50
KansasCity,Mo. S5	6.70
Midland,Pa. C18	5.85
NewBritn.,Conn.(10) S15	6.05
Sharon,Pa. S3	6.45
Youngstown U5	6.10

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.50
Bridgeprt,Conn.(10) S15	5.80
Butler,Pa. A10	5.10
Cleveland A7, J5	5.10
Dearborn,Mich. D3	6.05
Detroit D2	5.60
Detroit M1	5.45
Dover,O.(40) G6	5.50
Ecorse,Mich. G5	5.30
Follansbee,W.Va. F4	5.10
Fontana,Calif. K1	6.75
FranklinPark,Ill.(40)T6	5.35
Ind Harbor,Ind. I-2	5.35
Lackawanna,N.Y. B2	5.10
LosAngeles C1	6.85
Mattapan,Mass. T6	5.95
Middletown,O. A10	5.10
NewBritain(10) S15	5.80
NewCastle,Pa. B4	5.80
NewCastle,Pa.(40) E5	5.70
NewHaven,Conn. D2	5.85
NewHaven,Conn. A7	5.60
Pawtucket,R.I. R3	6.45
Pawtucket,R.I.(21) N8	6.30
Riverdale,Ill.(40) A1	5.35
Rome,N.Y. R6	5.10
Sharon,Pa. S3	5.80
SparrowsPoint,Md. B2	5.10
Trenton,N.J. R5	6.45
Wallingford,Conn. W2	6.30
Warren,O. T5	5.70
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown C8 (40)	5.70
Youngstown Y1	5.10

STRIP, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.70
Weirton,W.Va. W6	5.10
Youngstown C8	5.70

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)S15	12.15
Carnegie,Pa. S18	12.00
Cleveland A7	11.40
Dover,O. G6	11.90
Fontana,Calif. K1	13.05
Harrison,N.J. C18	12.00
Midland,Pa. C18	12.00
NewBritn.Conn.(10)S15	12.15
Pawtucket,R.I.(11) N8	12.15
Pawtucket,R.I.(12) N8	12.45
Sharon,Pa. S3	12.00
Worcester,Mass. A7	11.70
Youngstown, C8	12.00

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.975
Warren,O. R2	4.325

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.70

TIGHT COOPERAGE HOOP

Atlanta A11	4.45
Riverdale,Ill A1	4.30
Sharon,Pa. S3	4.65
Youngstown U5	4.15

STRIP, Cold-Finished, Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7		6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
Bristol,Conn. W1	....	....	8.55	10.50	....
Carnegie,Pa. S18	....	7.65	8.25	10.20	12.50
Cleveland A7	5.10	7.30	8.25	10.20	12.50
Dearborn,Mich. D3	6.05	7.90	8.50	....	....
Detroit D2	6.45	7.50	8.10	....	....
Dover,O. G6	5.70	7.65	8.25	10.20	12.50
FranklinPark,Ill. T6	5.45	7.45	8.40	10.35	12.65
Harrison,N.J. C18	....	....	8.55	10.50	12.80
Mattapan,Mass. T6	5.95	7.60	8.55	10.50	12.80
NewBritn.,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
NewCastle,Pa. B4	5.80	7.65	8.25	10.20	....
NewCastle,Pa. E5	5.80	7.65	8.25	10.20	12.50
NewHaven,Conn. D2	6.70	7.60	8.20	....	....
NewYork W3	....	7.95	8.55	10.50	12.80
Pawtucket,R.I. N8:					
Cleve.orPitts.Base	....	7.65	8.25	10.20	12.50
Worcester,Mass.,Base	6.30	7.95	8.55	10.50	12.80
Sharon,Pa. S3	5.80	7.65	8.25	10.20	12.50
Trenton,N.J. R5	....	7.50	8.55	10.50	12.80
Wallingford,Conn. W2	6.30	7.60	8.20	10.15	12.65
Warren,O. T5	6.20	7.65	8.25	10.20	12.50
Weirton,W.Va. W6	5.80	7.65	8.25	10.20	12.50
Worcester,Mass. A7	5.40	7.60	8.55	10.50	12.80
Worcester,Mass. T6	5.95	7.60	8.55	10.50	12.80
Youngstown C8	....	7.65	8.25	10.20	12.50

Spring Steel (Tempered)

Trenton,N.J. R5 (29)	....	....	10.30	12.50	15.35
Harrison,N.J. C18	....	....	10.30	12.50	15.35
NewYork W3	....	....	10.30*	12.50*	15.35*
Youngstown C8	....	....	10.30	12.50	15.35

* Plus 1.575 per 100 lb.

NewCastle,Pa. B4 5.80
NewCastle,Pa.(40) E5 5.70
NewHaven,Conn. D2 5.85
NewHaven,Conn. A7 5.60
Pawtucket,R.I. R3 6.45
Pawtucket,R.I.(21) N8 6.30
Riverdale,Ill.(40) A1 5.35
Rome,N.Y. R6 5.10
Sharon,Pa. S3 5.80
SparrowsPoint,Md. B2 5.10
Trenton,N.J. R5 6.45
Wallingford,Conn. W2 6.30
Warren,O.(40) T5 5.70
Warren,O. R2 5.10
Weirton,W.Va. W6 5.10
Youngstown C8 (40) 5.70
Youngstown Y1 5.10

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc
B6 Bolardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div., H. K. Porter Co.
B14 A. M. Byers Co.
C1 Calstrip Steel Corp
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept., Wickwire Spencer Steel Division
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp
G6 Greer Steel Co.
H1 Hanna Furnace Corp
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

WIRE, Merchant Quality

(6 to 8 gage)	An'ld.	Galv.
AlabamaCity R2	6.075	6.325
Aliquippa J5	6.075	6.525†
Atlanta A11	6.325	6.675
Bartonville(19)K4	6.075	6.40
Buffalo W12	5.225	....
Cleveland A7	6.075	6.225
Crawfordsville M8	6.175	6.50
Donora,Pa. A7	6.075	6.225
Duluth,Minn. A7	6.075	6.225
Fairfield T2	6.075	6.225
Houston,Tex. S6	6.475	6.80
Johnstown B2	6.075	6.45†
Joliet,Ill. A7	6.075	6.225
KansasCity,Mo. S5	6.075	7.00
Kokomo C16	6.175	6.425
LosAngeles B3	7.025	....
Minnequa C10	6.325	6.70*
Monessen P7	6.075	6.45
Palmer W12	5.525	....
Pitts.,Calif. O14	7.025	7.175
Prtsmth.(18)P12	6.475	....
Rankin A7	6.075	6.225
So.Chicago R2	6.075	6.325
So.S.Fran. C10	7.925	7.40*
SparrowsPt. B2	6.175	6.55†
Sterling,Ill.(1)N15	6.075	6.40
Struthers,O. Y1	6.075	6.475
Torrance,Cal. C11	7.025	....
Worcester A7	6.375	6.525

*Based on 14c zinc; †14.50c zinc; ‡17.5c zinc.

WIRE (16 gage) Stone Stone
(Add 4.7% on base and extras)

	Anl'd.	Galv.
Aliquippa J5	10.15	12.15
Bartonville(19)K4	10.25	12.00*
Cleveland A7	10.25	11.65
Crawfrdsville M8	10.73	12.51
Fostoria,O. S1	10.40	13.00
Johnstown B2	10.73	12.58‡
Kokomo C16	10.625†	12.325‡
Minnequa C10	10.40	12.425*
Palmer,Mass. W12	10.25	12.15
Pitts.,Cal. C11	10.60	11.90
SparrowsPt. B2	10.84	12.68‡
Sterling(1) N15	10.73†	12.20
Waukegan A7	10.25	11.55
Worcester A7	....	11.85

*Based on 14c zinc; §14.60c zinc. †Includes 4.7% increase.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	5.225
Aliquippa,Pa. J5 (42)	4.85
Atlanta A11	5.475
Alton,Ill. L1	5.45
Bartonville,Ill. K4	5.325
Buffalo W12	5.225
Chicago W13	5.475
Cleveland A7, C20	5.225
Crawfordsville,Ind. M8	5.325
Donora,Pa. A7	5.225
Duluth,Minn. A7	5.225
Fairfield,Ala. T2	5.225
Fostoria,O. (24) S1	5.725
Houston S6	5.625
Johnstown,Pa. B2	5.225
Joliet,Ill. A7	5.225
KansasCity,Mo. S5	5.825
Kokomo,Ind. C16	5.325
LosAngeles B3	6.175
Minnequa,Colo. C10	5.475
Monessen,Pa. P7	5.475
Newark 6-8 ga I-1	5.88
No Tonawanda B11	5.225
Palmer,Mass. W12	5.525
Pittsburg,Calif. C11	6.175
Portsmouth,O. P12	5.625
Rankin,Pa. A7	5.225
So.Chicago,Ill. R2	5.225
So.SanFrancisco C10	6.175
SparrowsPoint,Md. B2	5.325
Sterling,Ill. (1) N15	5.225
Struthers,O. Y1	5.225
Torrance,Calif. C11	6.175
Waukegan,Ill. A7	5.225
Worcester,Mass. A7	5.525

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	6.20
Buffalo W12 (43)	6.35
Cleveland A7 (43)	5.85
Crawf'sville,Ind.MS(43)	5.85
Dover,O. G6	6.20
Fostoria,O. S1 (43)	6.00
Kokomo,Ind. C16 (43)	5.70
FranklinPark,Ill. T6(43)	6.20
Massillon,O. R8 (43)	5.85
Monessen,Pa. P16 (43)	6.35
Monessen,Pa. P7 (43)	6.10
Pawtkt.R.I.(12) N8 (43)	6.85
Trenton,N.J. R5 (43)	6.15
Worcester,Mass.A7 (43)	6.15
Worcester,Mass.T6 (43)	6.50
Worcester,Mass.W12(43)	6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.90
Monessen,Pa. P16 (43)	8.50
Muncie,Ind. I-7 (43)	8.70
Roebling,N.J. R5 (43)	8.80
SparrowsPt.,Md. B2(43)	8.60
Johnstown,Pa. B2 (43)	8.50

ROPE WIRE

Alton,Ill. L1 (43)	8.75
Bartonville,Ill. K4	8.95
Buffalo W12 (43)	8.55
Fostoria,O. S1 (43)	8.85
Johnstown,Pa. B2 (43)	8.55
Monessen,Pa. P16 (43)	8.55
Monessen,Pa. P7 (43)	8.80
Muncie,Ind. I-7 (43)	8.75
Palmer,Mass. W12 (43)	8.85
Portsmouth,O. P12 (43)	8.55
Roebling,N.J. R5 (43)	8.85
SparrowsPt.,Md. B2 (43)	8.65
Struthers,O. Y1 (43)	8.55
Worcester J4, T6 (43)	8.85

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 (43)	6.25
Alton,Ill. L1 (43)	6.55
Bartonville,Ill. K4	6.64
Buffalo W12 (43)	6.25
Cleveland A7 (43)	6.25
Donora,Pa. A7 (43)	6.25
Duluth,Minn. A7 (43)	6.25
Fostoria,O. S1 (43)	6.25
Johnstown,Pa. B2 (43)	6.25
Millbury(12) N6 (43)	8.05
Minnequa,Colo. C10(43)	6.50
Monessen,Pa. P7 (43)	6.25
Monessen,Pa. P16	6.75
Muncie,Ind. I-7 (43)	6.45
Palmer,Mass. W12(43)	6.55
Pittsburg,Calif. C11(43)	7.20
Roebling,N.J. R5 (43)	6.55
Portsmouth,O. P12(43)	6.25
So.Chicago,Ill. R2 (43)	6.25
So.SanFran. C10 (43)	7.20
SparrowsPt.,Md. B2 (43)	6.35
Struthers,O. Y1 (43)	6.25
Trenton,N.J. A7 (43)	6.55
Waukegan,Ill. A7 (43)	6.25
Worcester A7, T6 (43)	6.55
Worcester,Mass. W12(43)	6.55
Worcester,Mass. J4 (43)	6.75

WIRE, Upholstery Spring

Aliquippa,Pa. J5	6.275
Alton,Ill. L1	6.50
Buffalo W12	6.275
Cleveland A7	6.275
Donora,Pa. A7	6.275
Duluth,Minn. A7	6.275
Johnstown,Pa. B2	6.275
LosAngeles B3	7.225
Minnequa,Colo. C10	6.525
Monessen,Pa. P7	6.275
Monessen,Pa. P16(42)	6.40
NewHaven,Conn. A7	6.575
Palmer,Mass. W12	6.575
Pittsburg,Calif. C11	7.225
Portsmouth,O. P12	6.275
Roebling,N.J. R5	6.575
So.Chicago,Ill. R2	6.275
So.SanFrancisco C10	7.225
SparrowsPoint,Md. B2	6.375
Torrance,Calif. C11	7.225
Trenton,N.J. A7	6.575
Waukegan,Ill. A7	6.275
Worcester,Mass. A7	6.575

WIRE, Fine & Weaving (8" Coils)

Alton,Ill.L1 (43)	9.20
Bartonville,Ill. K4	9.42
Buffalo W12 (43)	8.90
Chicago W13	9.32
Cleveland A7 (43)	8.90
Crawf'sville,Ind. MS(43)	8.90
Fostoria,O. S1 (43)	8.90
Johnstown,Pa. B2 (43)	8.90
Kokomo,Ind. C16 (43)	8.90
Monessen,Pa. P16 (43)	8.90
Muncie,Ind. I-7 (43)	9.10
Palmer,Mass. W12 (43)	9.20
Roebling,N.J. R5 (43)	9.20
Waukegan,Ill. A7 (43)	8.90
Worcstr,Mass. A7,T6(43)	9.20

WIRE, Tire Bead

Bartonville,Ill. K4	11.51
Monessen,Pa. P16 (43)	11.40
Roebling,N.J. R5 (43)	11.55

WOVEN FENCE,9-15½ Ga. Col.

AlabamaCity,Ala. R2	135
Ala.City,Ala.,17-18ga.R2	222
Aliqu'pa,Pa.9-14½ga.J5	139‡
Atlanta A11	140
Bartonville,Ill.(19) K4	137
Crawfordsville,Ind. M8	139
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Houston,Tex. S6	145
Johnstown,Pa. B2	138
Johnstown,17ga.,6" B2	229
Joliet,Ill. A7	133
KansasCity,Mo. S6	149
Kokomo,Ind. C16	140
Minnequa,Colo. C10	146*
Monessen,Pa. P7	138
Pittsburg,Calif. C11	156
Rankin,Pa. A7	133
So.Chicago,Ill. R2	135
Sterling,Ill. (1) N15	137

*Based on 14c zinc; 117.5c zinc.

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2	140
Duluth,Minn. A7	133
Franklin,Pa. F5	145
Huntington,W.Va. W7	148
Johnstown,Pa. B2	148
Marion,O. P11	140
Minnequa,Colo. C10	138
Moline,Ill. R2	136
So.Chicago,Ill. R2	140
Tonawanda,N.Y. B12	148
Williamsport,Pa. S19	158

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	144
AliquippaPa. J5	148‡
Atlanta A11	149
Bartonvill,Ill.(19) K4	146
Crawfordsville,Ind. M8	148
Donora,Pa. A7	142
Duluth,Minn. A7	142
Fairfield,Ala. T2	142
Houston,Tex. S6	164
Johnstown,Pa. B2	146
Joliet,Ill. A7	142
KansasCity,Mo. S5	154
Kokomo,Ind. C16	149
Minnequa,Colo. C10	153*
Monessen,Pa. P7	147
Pittsburg,Calif. C11	162
Rankin,Pa. A7	142
So.Chicago,Ill. R2	144
So.SanFran.,Calif. C10	167*
SparrowsPoint,Md. B2	147
Sterling,Ill.(1) N15	146

*Based on 14c zinc; ‡17.5c zinc.

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	132
Atlanta A11	135
Bartonville,Ill.(19) K4	132
Crawfordsville,Ind. M8	134
Donora,Pa. A7	132
Duluth,Minn. A7	132
Fairfield,Ala. T2	132
Joliet,Ill. A7	132
KansasCity,Mo. S5	144
Kokomo,Ind. C16	134
Minnequa,Colo. C10	137
Pittsburg,Calif. C11	156
So.Chicago,Ill. R2	132
So.SanFran.,Calif. C10	156
SparrowsPoint,Md. B2	134
Sterling,Ill.(1) N15	132

TRACK BOLTS (20) Treated

KansasCity,Mo. Sa(6)	9 85
Lebanon,Pa. (31) B2	9 85
Minnequa,Colo. C10	9 85
Pittsburgh (3), P14	9 85

AXLES

Port Harbor,Ind. S13	5 65
Johnstown,Pa. B2	5 65

NAILS, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	127
Aliquippa,Pa. J5	127
Atlanta A11	130
Bartonville,Ill.(19) K4	127
Chicago,Ill. W13	127
Cleveland A9 (44)	125
Crawfordsville,Ind. M8	130
Donora,Pa. A7	127
Duluth,Minn. A7	127
Fairfield,Ala. T2	127
Galveston,Tex. I-7	135
Houston,Tex. S6	145
Johnstown,Pa. B2	127
Joliet,Ill. A7	127
KansasCity,Mo. S5	129
Kokomo,Ind. C16	128
Minnequa,Colo. C10 (44)	123
Monessen,Pa. P7	127
Pittsburg,Calif. C11	146
Portsmouth,O. P12	132
Rankin,Pa. A7	127
So.Chicago,Ill. R2	127
SparrowsPt.,Md. B2	129
Sterling,Ill.(1) N15	127
Torrance,Calif. C11	147
Worcester,Mass. A7	133

STAPLES, Polished, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	126
Aliquippa,Pa. J5	126
Atlanta A11	129
Bartonville,Ill. (19) K4	126
Chicago W13	127
Crawfordsville,Ind. M8	128
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Johnstown,Pa. B2	126
Joliet,Ill. A7	126
Kokomo,Ind. C16	128
Minnequa,Colo. C10 (45)	123
Monessen,Pa. P7	127
Pittsburg,Calif. C11	146
Portsmouth,O. P12	132
Rankin,Pa. A7	126
So.Chicago,Ill. R2	126
SparrowsPt.,Md. B2	128
Sterling,Ill.(1) N15	126
Torrance,Calif. C11	146
Worcester,Mass. A7	132

NAILS, Cut (100 lb keg)

To dealers (33)	
Conshohocken,Pa. A1	$7 80
Wheeling,W.Va. W10	7 80

TIE PLATES

Fairfield,Ala. T2	4 775
Gary,Ind. U5	4 775
Ind Harbor,Ind. I-2	4 775
Lackawanna,N.Y. B2	4 775
Minnequa,Colo. C10	$95.50*
Pittsburg,Calif. C11	4 925
Seattle B3	4 925
Steelton,Pa. B2	4 775
Torrance,Calif. C11	4 925

* Per net ton.

JOINT BARS

Bessemer,Pa. U5	4 925
Fairfield,Ala. T2	4 925
Ind Harbor,Ind. I-2	4 925
Joliet,Ill. U5	4 925
Lackawanna,N.Y. B2	4 925
Minnequa,Colo. C10	4 925
Steelton,Pa. B2	4 925

STANDARD TRACK SPIKES

Ind Harbor,Ind. I-2, Y1	6 65
KansasCity,Mo. S5	6.90
Lebanon,Pa. B2	6 65
Minnequa,Colo. C10	6 65
Pittsburgh J5	6 65
Seattle B3	7 15
So.Chicago,Ill. R2	6 65
Struthers,O. Y1	6 65
Youngstown R2	6 65

RAILS	Std. No. 1	Std. No. 2	All 60 lb No. 2	Std. Tee Rails 60 lb Under
Bessemer,Pa. U5	3.775	3.675	3.725	4.25
Ensley,Ala. T2	3.775	3.675	....	4.25
Fairfield,Ala. T2	....	....	....	4.25
Gary,Ind. U5	3.775	3.675	3.725	....
Huntington,W.Va. W7	....	....	....	5.25
IndianaHarbor,Ind. I-2	3.775	3.675	3.725	....
Johnstown,Pa. B2	....	....	....	(16)4.25
Lackawanna,N.Y. B2	2.775	3.675	....	4.25
Minnequa,Colo. C10	$75.50*	$73.50*	....	4.75
Steelton,Pa. B2	3.775	3.675	....	....
Williamsport,Pa. S19	....	....	....	5.00

* Per net ton.

TOOL STEEL

(Prices subject to 4.7% increase)

Grade	$ per lb
Regular Carbon	@.230
Extra Carbon	@.270
Special Carbon	@.325
Oil Hardening	@.350
5% Cr Hot Work	@.350
Hi-Carbon-Cr	@.635

Grade by Analysis

W	Cr	V	Co	
18	4	1		1.500
18	4	2		1.65- 1.66
20	25	4	25	1.6 12 25 3.55 3.62
18	4	2	7	2.400
18	25	4	25	1 4 75 2.12
18	4	2	9	2.115 2.14
13	6	4		1.602
	3	25	0 5	1.01

W	Cr	V	Mo	
6	4	2	6	0.90- 0.965
6	4	3	6	1.190
1.5	4	1	8.5	0.810

Tool steel producers include: A4, As, B2, B8, C4, C6, C13, C18, D4, F2, J3, L3, M10, S8, U4, V2 and V3.

FOOTNOTES

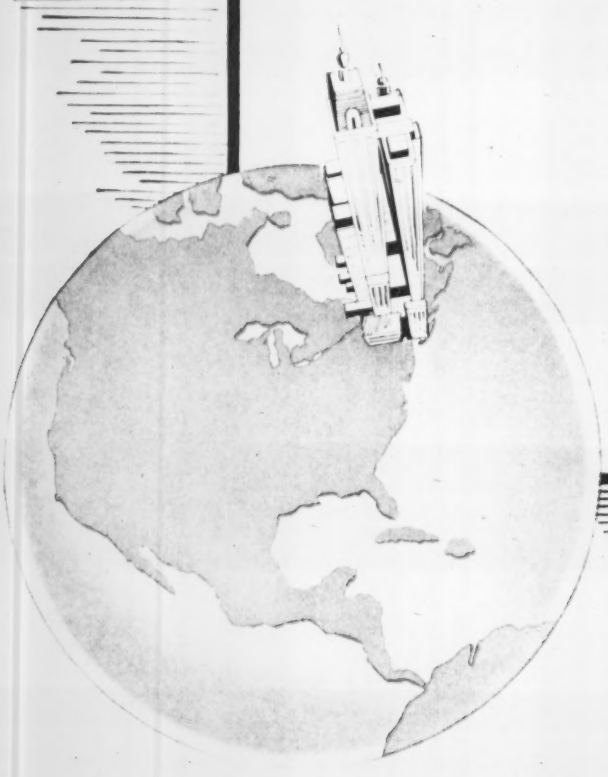
(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) Chicago or Birm. base.
(6) To jobbers, 3 cents lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 ga. & heavier.
(15) ¼" and thinner.
(16) 4c lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven Conn., base.
(22) Del. San Francisco Bay area.
(23) 200/a. 26" wide.
(24) Iredust 0.20c, finer than 15 GA.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators, to consumers, 5.85c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Add $11.50 per ton.
(30) Sheared; add 0.75c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) Jobbers, deduct 20c.
(34) 7.85c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter; 60" & narrower.
(38) 14 gage & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035", 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Plus 0.375c per 100 lb.
(43) Plus 4.7% on base and extras.
(44) Plus 45c per 100 lb.
(45) Plus 40c per 100 lb.
(46) Plus 2.2 per cent.

Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng. HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Div.
N14 Northwest Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Jersey Zinc Co.
O1 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RellianceDiv.,EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sou. Sheffield S.&I. div.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seede-Imbert Steel
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U4 Universal Cyclops Steel
U5 United States Steel Corp.
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West. Auto Mach. Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet & Tube

Since 1850

WE HAVE PRODUCED ENOUGH IRON ORE TO MAKE THE STEEL TO BUILD A CITY THE SIZE OF NEW YORK:—



. . . During our first century we have furnished the steel makers of America with considerably more than two hundred million tons of high grade iron ores. The many years in which we have produced and shipped these ores have given us a reputation of reliability and integrity.

In the second century we will not rest on our laurels, but will continually strive to improve the quality of our ores, coals and lake transportation.

CCC

The Cleveland-Cliffs Iron Company

UNION COMMERCE BUILDING • CLEVELAND 14, OHIO

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	½	¾	1	1¼	1½	2	2½	3
List Per Ft	8.5c	11.5c	17c	23c	27.5c	37c	58.5c	76.5c
Pounds Per Ft.	0.85	1.13	1.68	2.28	2.73	3.68	5.82	7.62

	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	32.5	15.25	35.5	18.25	38	20.75	38.5	20.5	39	21	39.5	21.5	40	21.25	40	21.25
Alton, Ill. L1 (‡)	29.5	10.5	32.5	14.5	35	18	35.5	18.5	36	19.5	36.5	20	37	20.5	37	20.5
Benwood, W. Va. W10	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	21.5	39.5	22	40	21.75	40	21.75
Etna, Pa. N2 (‡)	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	22.25	39.5	22	40	21.75	40	21.75
Fontana, Calif. K1 (‡)	19.5	0.25	22.5	4.25	25	7.75	25.5	7.5	26	8.5	26.5	9	27	8.75	27	8.75
Ind. Harbor, Ind. Y1 (‡)	31.5	14.25	34.5	18.25	37	21.75	37.5	21	38	22	38.5	22.25	39	21.75	39	21.75
Lorain, O. N3 (*)	32.5	22.25	35.5	26.25	38	29.75	38.5	27.25	39	28.25	39.5	28.75	40	26.25	40	26.25
Sharon, Pa. M6	32.5	14.25	35.5	18.25	38	21.25	38.5	20.50	39	21.00	39.5	21.50	40	20.75	40	20.75
Sparrows Pt., Md. B2	30.5	11.25	33.5	15.25	36	18.75	36.5	18.5	37	19.5	37.5	20	38	19.75	38	19.75
Youngstown R2 (**)	32.5	16.25	35.5	20.25	38	23.75	38.5	22.75	39	23.75	39.5	24.25	40	23.25	40	23.25
Youngstown Y1 (‡)	32.5	15.25	35.5	19.25	38	22.75	38.5	22.00	39	23.00	39.5	23.50	40	22.75	40	22.75
Wheatland, Pa. W9	32.5	13.25	35.5	16.25	38	18.75	38.5	18	39	19.5	39.5	20	40	20.25	40	20.25

SEAMLESS STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	2	2½	3	3½	4	5	6
List Per Ft	37c	58.5c	76.5c	92c	$1.09	$1.48	$1.92
Pounds Per Ft.	3.68	5.82	7.62	9.20	10.89	14.81	19.18

	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15
Ambridge, Pa. N2	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15
Lorain, O. N3 (*)	24	12.75	27	12.75	27	12.75	29	14.75	29	14.75	33.75	19.5	33.75	19.5
Youngstown Y1 (‡)	24	7.50	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16	33.75	16

ELECTRIC WELD STANDARD PIPE, T & C

Youngstown R2 (**)	24	8.25	27	9.75	27	9.75	29	11.75	29	11.75	33.75	16.5	33.75	16.5

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛	¼	⅜	½	¾	1
List Per Ft	5.5c	6c	6c	9.2c	12c	$1.09
Pounds Per Ft	0.24	0.42	0.57	0.85	1.13	10.89

	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Benwood, W. Va. W10	29.5	+0.25	23.25	+3.5	17.75	+7.75	33	14.25	33	14.25		
Butler, Pa. F6 (‡)	30.5	1.25	25	+1.75	20	+5.5						
Etna, Pa. N2 (‡)	30.5	1.25	25	+1.75	20	+5.5	33	14.25	33	14.25		
Sharon, Pa. M6 (‡)	29.5	1.75	23	+2.25	18	+5.25						
Sharon, Pa. S4 (‡)	30.5	1.25	25	+1.75	20	+5.5						
Sparrows Pt., Md. B2	28.5	+0.75	23	+3.75	18	+7.50						
Youngstown R2 (**)							33	15.75	33	15.75		
Wheatland, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50						

Galvanized pipe discounts based on zinc price of (‡) 11c, (‡) 12.50c, (**) 11.50c, (*) 9c, with discounts adjusted depending on price of zinc at time of shipment.

CLAD STEELS

(Cents per pound; add 1.7% to base price and extras)

	Plates		Sheets	
Cladding	Carbon Base		Carbon Base	Copper Base
Stainless	10%	20%	10%	20%	Both Sides
302			19.75- 26.24-27.50	77.00
304	25.00	29.50	24.50- 27.50-27.75	77.00
309	30.50	35.00		
310	36.50	41.00		144.00
316	28.50	34.00	26.00- 35.92-36.50	
317	34.50	39.00		
318	33.50	38.00		
321	26.50	31.00-32.00	23.00- 33.00	111.00
347	27.50	32.00	24.00- 33.50-33.83	130.00
405	21.25	27.75		
410	20.75	27.25		
Nickel	33.00	46.13		
Inconel	41.25	54.18		165.00
Monel	34.93	46.28		
Copper*			11.00	

	Strip			
	Carbon Base			
	Cold-Rolled		Hot-Rolled	
	10%	Both Sides	10%	Both Sides
Nickel	41.00	54.00		
Copper*	23.50	26.65	20.20	26.40

* Deoxidized. Production points for carbon base products: Stainless plates, sheets, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam.	15
⅝-in. & ¾-in.	18.5
⅞-in. and larger	17.5
Longer than 6 in.:	
All diams.	14
Lag bolts, all diams.:	
6 in. and shorter	23
over 6 in. long	21
Ribbed Necked Carriage	18.5
Blank	34
Plow	34
Step, Elevator, Tap and Sleigh Shoe	21
Tire Bolts	21
Boiler & Fitting-Up Bolts	31

NUTS

H.P. & C.P.	Reg.	Hvy.
Square:		
½-in. & smaller	15	15
⅝-in. & ¾-in.	12	6.5
⅞-in.-1½-in.	9	1
1⅝-in. & larger	7.5	1
H.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ¾-in.	16.5	6.5
⅞-in.-1½-in.	12	2
1⅝-in. & larger	8.5	2
C.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ¾-in.	23	17.5
⅞-in. & 1½-in.	19.5	12
1⅝-in. & larger	12	6.5

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller	35	28.5
⅝-in. & ¾-in.	29.5	22
⅞-in.-1½-in.	24	15
1⅝-in. & larger	13	8.5
	Light	
½-in. & smaller	35	
½-in. to ¾-in.	28.5	
⅞-in. to 1½-in.	26	

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	38
1 in. and smaller diam. x over 6 in.	26

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	35
¼-in. diam. & larger	16
N.F. thread, all diams.	10

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	48 & 10
Plated finishes	31 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
⅝-in. & smaller	42
¾-in. through 1 in.	34
Longer than 6 in.:	
⅝-in. and smaller	26
¾-in. through 1 in.	4

METALLURGICAL COKE

Price net ton

BEEHIVE OVENS

Connellsvil fur.	$14.50-15.00
Connellsvil fdy.	16.50-17.50
New River foundry	20.50
Wise county, foundry	15.50
Wise county, furnace	15.20

OVEN FOUNDRY COKE

Kearney, N. J. ovens	$24.00
Everett, Mass., ovens	
New England, del.	*26.65
Chicago ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.00
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, del.	28.12
Cincinnati, del.	28.85
Painesville, O., ovens	25.50
Cleveland, del.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	21.65
Cincinnati, del.	26.58
LoneStar,Tex., ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens	
St. Louis, del.	26.00
Portsmouth, O., ovens	24.00
Cincinnati, del.	26.62
Detroit, ovens	25.50
Detroit, del.	26.50
Buffalo, del.	28.08
Flint, del.	28.23
Pontiac, del.	27.06
Saginaw, del.	28.58

*Or within $4.55 freight zone from works.

NOTE: Current prices on boiler tubes, coal chemicals, fluorspar, electrodes and rivets appeared on page 173, Feb. 2 issue.

STAINLESS STEEL

(Add 4.7% on base price and extras)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301	41.00	34.00	31.25
302	41.25	36.75	31.50
303	43.25	40.25	34.00
304	43.25	38.75	33.00
309	56.00	55.00	44.75
316	57.00	56.00	49.25
321	49.25	48.25	37.00
347	53.75	52.25	41.50
410	36.50	36.50	25.75
416	37.00	37.00	26.25
420	44.00	47.00	31.25
430	39.00	31.00	26.25
501	27.50	26.00	14.25
502	28.50	27.00	15.25

Bait., Types 301-347 and 430 sheets, except 303 and 309 E2.

Brackenridge, Pa. sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa. sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip and wire C18.

Harrison, N. J., wire Type 302, 33.00c; Type 304, 34.50c; Type 316, 51.50c, including 4.7% increase on base price.

Massillon, O., all items, R2.

McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.

McKeesport, Pa., bars, sheets except Type 416 U5.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Muncie, Ind., wire 1-7 quotes types 302, 304, 430.

Pittsburgh, sheets C18.

Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars except 31.50c on Type 301 and 45.25c on 309 C4.

Sharon, Pa., strip, except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 309, 316 sheets 62.00c, strip 64.00c W4.

Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.

Youngstown, strip except Types 303, 309, 316, 416, 501 and 502 and 34.25c on Type 301 CS.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98+% Fe, annealed	18.00
Unannealed	14.50
Swedish, c.i.f. N.Y., c.l., in bags	10.90
Electrolytic iron:	
Annealed, 99.5% Fe	42.50
Unannealed (99+% Fe)	36.50
Unannealed (99+% Fe) minus 325 mesh	53.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	23.00
Antimony, 500 lb lots	71.00
Brass, 200-ton lots	31.00-34.25
Bronze, 10-ton lots	51.25-60.00
Phosphor Copper, 20-ton lots	50.00
Copper:	
Electrolytic	37.25
Reduced	35.25
Lead	7.50*
Magnesium	75.00-85.00
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	86.00
Nickel-Silver 5-ton lots	46.00
Silicon	38.50
Solder	8.50*
Stainless Steel, 302	83.00
Zinc, 10-ton lots	18.00-31.00
Tungsten	Dollars
Melting grade, 99% 6c to 200 mesh:	
1000 lb and over	5.85
Less than 1000 lb	6.00
Molybdenum:	
99.9% minus 200 mesh	3.24
Chromium, electrolytic 99% Cr min.	3.50

* Plus cost of metal.

want speedy service on tool steels?

If you need tool steel, or any other specialty steel in a hurry, put in a call to Crucible. All our warehouses have good stocks of our more than 400 steels.

Crucible customers have been taken care of — regardless of their volume of business or whether steel is in short or abundant supply. They can always depend on reliable deliveries, and top quality. That's why many of them have been with us since we were founded . . . now more than fifty years ago.

Our warehouses are conveniently located throughout the country. Why don't you call the nearest one today, for prompt, reliable delivery.

Stocks maintained of:

Rex High Speed Steel . . . ALL grades of Tool Steel (including Die Casting and Plastic Die Steel, Drill Rod, Tool Bits and Hollow Drill Steel) . . . Stainless Steel (Sheets, Bars, Wire, Billets, Electrodes) . . . AISI Alloy, Max-el Machinery, Onyx Spring and Special Purpose Steels

CRUCIBLE first name in special purpose steels

53 years of Fine steelmaking **WAREHOUSE SERVICE**

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

Branch Offices and Warehouses: ATLANTA • BALTIMORE • BOSTON • BUFFALO • CHARLOTTE • CHICAGO • CINCINNATI • CLEVELAND • DAYTON DENVER • DETROIT • HOUSTON • INDIANAPOLIS • LOS ANGELES • MILWAUKEE • NEWARK • NEW HAVEN • NEW YORK • PHILADELPHIA • PITTSBURGH PROVIDENCE • ROCKFORD • SAN FRANCISCO • SEATTLE • SPRINGFIELD, MASS. • ST. LOUIS • ST. PAUL • SYRACUSE • TORONTO, ONT. • WASHINGTON, D. C.

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal 10 Ga.†	H.R.*	C.R.*	H.R. Rds	C.F. Rds.‡	H.R. Alloy 4140††		Carbon	Floor
Baltimore	5.81	7.17	8.37	6.42	...	6.41	7.42	11.17	6.47	6.47	7.70
Boston	6.51	7.36	8.54	6.55	...	6.42	7.49	11.18	6.56	6.75	7.98
Buffalo	5.80	6.65	8.41	6.21	...	5.90	6.90	11.07	6.08	6.30	7.67
Birmingham	5.80	6.65	7.70[2]	5.80	...	5.80	8.65	...	5.95	6.10	8.65
Chicago	5.80	6.65	8.00	5.83	...	5.83	6.80	10.65	5.95	5.95	7.18
Cincinnati	6.13	6.72	8.47	6.14	...	6.13	7.16	11.07	6.42	6.47	7.60
Cleveland	5.80	6.65	8.14	6.00	...	5.80	6.90	10.79	6.28	6.12	7.51
Detroit	6.07	6.87	8.64	6.13	7.70	6.12	7.10	10.92	6.42	6.47	7.52
Houston	6.74	...	8.72	6.89	...	6.98	...	...	6.82	6.78	8.16
Jersey City, N.J.	6.35	7.27	8.47	6.75	...	6.59	7.78	9.54	6.39	6.60	8.01
Los Angeles	6.60	8.45	9.60	6.75	11.20	6.60	8.60	12.05	6.60	6.65	8.90
Milwaukee	5.97	6.82	8.17	6.00	...	6.00	7.07	10.82	6.12	6.12	7.35
Moline, Ill.	6.16	7.00	8.35	6.19	...	6.18	7.16	...	6.30	6.30	...
Newark, N. J.	6.62	7.41	8.63	6.72	...	6.79	7.71	...	6.79	6.78	7.18
New York	6.26	7.27	8.42	6.56	...	6.59	7.53	11.04	6.39	6.60	8.01
Norfolk, Va.	7.60	...	...	...	...	6.44	8.70	...	7.25	6.64	7.33
Philadelphia	6.11	7.13	8.30	6.45	8.30	6.42	7.45	10.79	6.17	6.24	7.36
Pittsburgh	5.80	6.65	8.00	5.94	...	5.83	6.90	10.65	5.95	5.95	7.18
Portland, Oreg.	7.80	9.05	10.00	7.60	...	7.35	9.65	...	7.30	7.30	9.25
Richmond, Va.	6.14	6.95	8.68	6.53	...	6.30	7.63	...	6.58	6.68	7.80
St. Louis	6.10	6.94	8.30	6.14	...	6.13	7.20	10.96	6.35	6.35	7.58
St. Paul	6.47	7.31	8.66	6.50	...	6.49	7.57	...	6.61	6.61	7.84
San Francisco	6.90	8.20	9.60	6.75	...	6.65	8.65	12.05	6.50	6.75	8.90
Seattle-Tacoma	7.30	9.04	9.70	7.95	...	7.13	9.62	13.90§	6.87	7.30	9.11
Spokane (city)	7.80	9.40	10.70	7.65	...	7.10	9.70	11.90	7.00	7.10	9.15
Washington	6.31	7.61	8.90	6.89	...	6.90	8.03	...	6.93	6.95	8.17

Prices do not include gage extras; † prices include gage and coating extras except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 25-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2] 500 to 1499 lb, [3] 1000 to 1999 lb.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural), lower lake ports.

Old range bessemer	$9.45
Old range nonbessemer	9.30
Mesabi bessemer	9.20
Mesabi nonbessemer	9.05
High phosphorus	9.05

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 1, 1950, in applicable lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

Eastern Local Iron Ore

Cents per unit del. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports.

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	24.00
North African hematites (spot)	26.00-28.00
Brazilian iron ore, 67-69% (spot)	32.00

Tungsten Ore

Net ton unit, duty paid.

Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite, mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-$1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 85c-87c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$39.00-$42.00
48% 3:1	44.00-45.00
48% no ratio	30.00-32.00

South African Transvaal

44% no ratio	$27.00-$28.00
48% no ratio	34.00-35.00

Brazilian

44% 2.5:1 lump	nom.

Domestic

(Rail nearest seller)

48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb. molybdenum content, mines	$1.00

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si; Carlot per gross ton, $85, Palmerton, Pa.; $85, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $225 per gross ton of alloy; c.l. packed $237; gross ton lots, packed, $252; less gross ton lots, packed $269; f.o.b. Sheridan, Pa., Alloy, W. Va., Niagara Falls, N. Y., Ashtabula, Philo or Marietta, O., Lynchburg, Va. Base price: $227, Johnstown, Pa., $228, Etna, Pa., $226, Anaconda, Mont.

Shipment from Pacific Coast warehouses by one seller, add $33 to above prices f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $267; less gross ton lots, $284, f.o.b. Chicago. Add or subtract $2.80 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%): Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.6c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C, max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 0.5c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.1c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 96% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.4c. Delivered. Spot, add 2c.

Electromanganese: Carload, 30c; ton lots, 32c; 2,000 to 19,999 lb, 34c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4c per lb of alloy; carload packed 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 5% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract, $196 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.95, delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx, Ta 20% approx, and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, deld.; less ton lots $3.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 4½c per lb of alloy, ton lot 47c, less ton lot 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr, 5-7%, Fe 20% approx). Contract, carload, packed, 4" x 12" M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 18c per lb of alloy; ton lots 19c; less ton lots 20.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-S Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14c per lb of alloy; ton lots 16.50c; less ton lots 17.25c, f.o.b., Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al, bal. Fe). Lump, carload, bulk 14.50c, packed 15.50c; ton lots, packed, 15.25c; less ton lots, packed, 16.25c per lb of alloy, delivered to destination within United States.

Ferrophosphorus: (23-25% based on 24% P content with upstage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Sigle, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb. contained Mo, f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic Oxide: Per lb. contained Mo, f.o.b. Langeloth, Pa., $1.14, in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

Note: For current prices on chromium, silicon, vanadium, boron and tungsten alloys see page 175, Feb. 2 issue; calcium, zirconium, briquetted alloys and refractories, page 115, Jan. 26 issue.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

STEELMAKING SCRAP COMPOSITE

Feb. 12	$43.00
Feb. 5	43.00
Jan. 1953	43.00
Feb. 1952	43.00
Feb. 1948	40.48

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Grade 1 Basing Point	No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grades

2 No. 1 Busheling	Base
3 No. 1 Heavy Melting	$1.00
4 No. 2 Heavy Melting	1.00
5 No. 2 Bundles	1.00
6 Machine Shop Turnings	10.00
7 Mixed Borings and Short Turnings	6.00
8 Shoveling Turnings	6.00
9 No. 2 Busheling	4.00
10 Cast Iron Borings	6.00

Elec. Furnace and Fdry. Grades

11 Billet, Bloom & Forge Crops	+ 7.50
12 Bar Crops & Plate	+ 5.00
13 Cast Steel	+ 5.00
14 Punchings & Plate Scrap	+ 2.50
15 Electric Furnace Bundles	+ 2.00
Cut Structurals & Plate:	
16 3 feet and under	+ 3.00
17 2 feet and under	+ 5.00
18 1 foot and under	+ 6.00
19 Briquetted Cast Iron Borings	Base
Foundry Steel:	
20 2 feet and under	Base
21 1 foot and under	+ 2.00
22 Springs and Crankshafts	+ 1.00
23 Alloy Free Turnings	— 3.00
24 Heavy Turnings	1.00
25 Briquetted Turnings	Base
26 No. 1 Chemical Borings	3.00
27 No. 2 Chemical Borings	4.00
28 Wrought Iron	+ 10.00
29 Shafting	+ 10.00
31 Old Tin & Terne Plated Bundles	— 10.00

Unprepared Grades

When compressed constitutes:

32 No. 1 Bundles	6.00
33 No. 2 Bundles	5.00
34 Other than material suitable for hydraulic compression	8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer, otherwise ceiling prices shall not exceed prices established for grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for briquetting and direct charge into an electric furnace, otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces or foundries, or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or refolling purposes.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2 No. 2 Heavy Melting Steel	$2.00
3 No. 2 Steel Wheel	Base
4 Hollow Bored Axles and loco. axles with keyways between the wheelseats	Base
5 No. 1 Busheling	3.50
6 No. 1 Turnings	3.00
7 No. 2 Turnings, Drillings & Borings	12.00
8 No. 2 Cast Steel and uncut wheelcenters	6.00
9 Uncut Frogs, Switches	Base
10 Flues, Tubes & Pipes	8.00
11 Structural Wrought Iron and/or steel, uncut	6.00
12 Destroyed Steel Cars	8.00
13 No. 1 Sheet Scrap	9.50
14 Scrap Rails, Random Lengths	+ 2.00
15 Rerolling Rails	+ 7.00
Cut Rails:	
16 3 feet and under	+ 5.00
17 2 feet and under	+ 6.00
18 18 inches and under	+ 8.00
19 Cast Steel, No. 1	+ 3.00
20 Uncut Tires	+ 2.00
21 Cut Tires	+ 5.00
Bolsters & Side Frames:	
22 Uncut	Base
23 Cut	+ 3.00
24 Angles, Splice Bars & Tie Plates	+ 5.00
25 Solid Steel Axles	+ 12.00
26 Steel Wheels, No. 3, oversize	Base
27 Steel Wheels, No. 3	+ 5.00
28 Spring Steel	+ 5.00
29 Couplers & Knuckles	+ 5.00
30 Wrought Iron	+ 8.00
31 Fireboxes	8.00
32 Boilers	— 6.00
33 No. 2 Sheet Scrap	— 13.00
34 Carsides, Doors, Car Ends, cut apart	— 6.00
35 Unassorted Iron & Steel	— 6.00
36 Unprepared scrap, not suitable for hydraulic compression	— 8.00

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin, authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, $8.

(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 5, $8.

(3) For crushing Grade No. 6, $3. For preparing into:

(4) Grade No. 25, $6.

(5) Grade No. 19, $6.

(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.

(7) Grade No. 17 or No. 21, $11.

(8) Grade No. 18, $12.

(9) For hydraulically compressing Grade No. 15, $8.

(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.

(2) For hydraulically compressing Grade No. 15, $6. For preparing into:

(3) Grade No. 16, $4.

(4) Grade No. 17, $5.

(5) Grade No. 18, $7.

(6) Grade No. 21, $4.

(7) Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into Grade No. 7, $9.

(2) For preparing Grade No. 3 into Grade No. 11, $7.

(3) For preparing Grade No. 3 into Grade No. 1, $4.

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:	
1. No. 1 (Cupola)	$49.00
2. No. 2 (Charging Box)	47.00
3. No. 3 (Hvy. Breakable)	45.00
4. No. 4 (Burnt Cast)	41.00
5. Cast Iron Brake Shoes	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop broken machinery	52.00

OPEN MARKET

(Delivered prices include broker's commission.)

Birmingham
(Delivered)

Shoveling turnings	$30.00-32.00
Cast iron borings	30.00-32.00
No. 1 cupola cast	44.00-45.00
Stove plate	42.00
Charging box cast	39.00-40.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	35.00-36.00

Boston
(Delivered)

No. 1 cupola cast	37.00
(F.o.b. shipping point)	
Heavy breakable	38.00-39.00
Stove plate	34.00-35.00
Unstripped motor blocks	30.00

Buffalo
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 1 busheling	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Cast iron borings	38.00
Short shoveling turnings	38.00
No. 1 cupola cast	44.00-45.00
No. 1 machinery cast	47.00-48.00

Chicago
(Delivered)

No. 2 heavy melting	42.50
No. 2 bundles	42.50
Machine shop turnings	30.50-32.50
Mixed borings, turnings	34.50-36.50
Shoveling turnings	34.50-36.50
Cast iron borings	34.50-36.50
No. 1 cupola cast	42.00-44.00
Charging box cast	40.00-42.00
Heavy breakable	37.00-39.00
Burnt cast	34.00-35.00
Cast iron brake shoes	40.00-42.00
Stove plate	40.00-42.00
Clean auto cast	44.00-46.00
Unstripped motor blocks	35.00-37.00
Malleable	46.00-48.00
Drop broken machinery	46.00-48.00

Cleveland
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Shoveling turnings	38.00
Cast iron borings	38.00
(F.o.b. shipping point)	
No. 1 cupola	45.00
Charging box cast	47.00
Burnt cast	41.00
Stove plate	46.00
Clean auto cast	52.00
Unstripped motor blocks	41.00
Malleable	55.00
Drop broken machinery	52.00

Detroit
(F.o.b. shipping point)

No. 1 cupola cast	47.00-48.00
Heavy breakable	43.00-44.00
Clean auto cast	48.00-50.00
Unstripped motor blocks	40.00-41.00
Drop broken machinery	50.00-52.00
Charging box cast	44.00-45.00

Los Angeles
(Delivered)

No. 1 heavy melting	32.00
No. 2 heavy melting	27.00
No. 1 bundles	33.00
No. 2 bundles	27.00
No. 1 cupola cast	45.00
Machine shop turnings	12.00

New York
(Brokers' buying prices)

No. 2 heavy melting	35.00
Mixed borings, turnings	25.00
Machine shop turnings	25.00
Cupola cast	40.00
Unstripped motor blocks	32.00-33.00

Philadelphia

No. 1 heavy melting	41.50†
No. 2 heavy melting	41.50†
No. 1 bundles	42.50†
No. 2 bundles	41.50†
No. 1 busheling	42.50†
Mixed borings, turnings	36.50†
Machine shop turnings	32.50†
Short shoveling turnings	36.50†
No. 1 cupola cast	44.00-45.00†
Unstripped motor blocks	39.00†‡
Heavy breakable	45.00‡
Machinery cast	52.00†‡
Charging box cast	45.00-46.00†‡

† Ceiling price. ‡ Nominal.
§ Shipping point. †† Delivered.

Pittsburgh
(Delivered)

No. 2 heavy melting	44.00†
No. 1 bundles	45.00†
No. 2 bundles	44.00†
Machine shop turnings	35.00†
Shovel turnings	39.00†
No. 1 cupola cast	46.00†
Heavy breakable	43.00†

† Ceiling price.

San Francisco
(Delivered)

No. 2 heavy melting	27.00
Machine shop turnings	12.00
No. 2 bundles	27.00
No. 1 cupola cast	40.00

Seattle
(Delivered)

No. 1 heavy melting	31.00
(F.o.b. shipping point)	
No. 1 bundles	29.00
No. 1 cupola cast	35.00-40.00
Heavy breakable	36.00-38.00
Unstripped motor blocks	31.00

St. Louis
(Delivered)

No. 1 cupola	48.00
Unstripped motor blocks	37.00

Youngstown
(Delivered)

No. 2 heavy melting	43.00
No. 2 bundles	43.00
Machine shop turnings	34.00

HAMILTON, ONT.
(Delivered Prices)

Heavy Melt	$35.50
No. 1 Bundles	35.50
No. 2 Bundles	35.50
Mechanical Bundles	32.00
Mixed Steel Scrap	31.50
Mixed Borings, Turnings	32.50
Rails, Remelting	35.50
Rails, Rerolling	44.50
Bushelling	30.00
Bushelling new factory:	
Prep'd	33.50
Unprep'd	31.50
Short Steel Turnings	32.50
Cast Iron Grades†	
No. 1 Machinery Cast	50.00

† F.o.b. shipping point.

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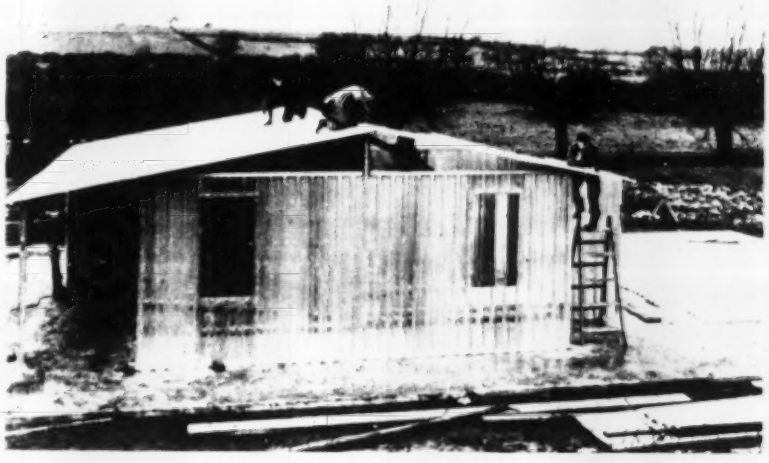
The Metal Market



New Contender in Lightweight Ranks

Imagine an eight-room house that weighs only 2300 pounds, and you can imagine the new all-aluminum house being built by Aluminium Ltd., Montreal. To be distributed by Aluminum Import Corp., the house will be fire-proof, corrosion-resistant and will take punishment of tropical climates. Complete instructions and necessary tools are enclosed with every house, one of which is seen above

Until they find out what's going to happen when on decontrol basis, sellers are dealing cautiously. Decontrol of nickel and other tight metals will be difficult

IMPENDING price decontrol on industrial materials and promised dismantling of CMP is stirring up buying interest in all near-ceiling metals. Sellers aren't nearly so eager to trade until the smoke clears.

The buying rush is easy to explain. Fabricators want to protect future positions from standpoints of price and adequate supply. Metals at ceilings are naturally those in tightest supply, and greatest demand users will take as much as they can get at current rates. Inventory regulations casually disregarded since their inception will be openly ignored from now on.

Selective Retention- Decontrol of some of the high-priority metals such as nickel and other alloying materials will present sticky problems. Continued allocations of these until July, perhaps longer, is certain. Washington reports say third quarter application forms won't go out to civilian goods producers; a decision on military goods producers should be reached soon.

There's a strong possibility that some form of selective price controls embracing materials under full allocation—will be kept in force. Pressure is mounting for OPS to let industry know where it stands so plans can be made accordingly. A detailed price decontrol timetable in preparation would do it. It may be made public this week.

Crowded Corner Universal recognition that a hefty boost in domestic copper price is coming lends impetus to forward buying. One dealer reminds its customers that "there are no regulations to prevent far-sighted customers from contracting now for copper needed during the second half of 1953, especially if the price is attractive."

Placing orders for first quarter delivery worries users now. Finding a home for February supplemental tickets has been no picnic. Everyone wants to sign up for delivery before the Apr. 30 price deadline. Order books after that date are much less crowded. Supply has been affected not only by prices, but also by a New York tugboat strike which held up unloading of some 15,000 tons of Chilean copper for ten days.

Not Too Dismal While the weeks following price freeing will undoubtedly see a great deal of readjustment and speculation (marked by consummation of some fantastic deals), the future is not as dark as pictured by many copper users. Today the average price of copper to a manufacturer using his 60 per cent domestic allocation and 40 per cent foreign entitlement is 29.30 cents a pound. Following initial fluctuations, the domestic quotation will rise to about that level and pressure on foreign producers to meet that level will be strong.

At least 5000 tons more copper per month will be available when price controls go off, by NPA's conservative estimate. Too, the copper industry is getting more competitive-minded because of substitution pressure for other materials. A seven-cent rise in cost to fabricators would price copper above a healthy slice of its current market.

Aluminum Curbs Fade

Aluminum regulations are being eased perceptibly. Second-quarter allocations to most civilian producers were upped from 55 to 60 per cent of base-period consumption in one of DPA's final acts before merger into ODM. NPA pepped up the market for aluminum from France, Norway, Germany and the U. K. by allowing unlimited foreign purchases in addition to domestic allotments. The order specifically excludes Canadian imports. Price for ingot is about 5.5 cents a pound above U. S. delivered prices. Only a limited amount of conversion work can be expected at this price. Spot purchases of mill products are discouraged by high tariffs.

NPA Revokes Tin Controls

NPA finally "recognized the obvious," as tin dealers say, and revoked all inventory and use restrictions on tin, tin and terne plate, collapsible tubes, cans and closures. Monthly reports on shipments, receipts, consumption and stocks are still required.

Light Metals Soar

Statistics on 1952 operations show spectacular gains in light metals output. Magnesium output rocketed 259 per cent over the year before to 105,821 tons, says the Bureau of Mines. Aluminum output reached 937,321 tons, an all-time record, reports the Aluminum Association. Primary output was 12 per cent greater than 1951, but sheet and plate shipments ran 0.4 per cent less, foil 17 per cent less and castings 4 per cent less.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c Conn. Valley; Lake 24.62½c delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25; 88-10-2-(No. 215) 40.00; 80-10-10 (No. 305) 32.00; No. 1 yellow (No. 405) 23.25.

Zinc: Prime western 11.50c; brass special 11.75c; intermediate 12.00c; East St. Louis high grade 12.50c and special high grade 12.00c, delivered.

Lead: Common 13.30c; chemical 13.40c; corroding 13.40c St. Louis.

Primary Aluminum: 99% plus, ingots 20.50c; pigs 19.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades notch bars, granulated or shot: Grade 1, 18.50c; grade 2, 18.00c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99.90-85% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.05% max., other impurities 0.15% max.) 34.00c, f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9% base sizes at refinery, unpacked, 60.00c; 25-lb pigs 62.00c; "XX" nickel shot 63.00c; "F" nickel shot or ingots for addition to cast iron, 60.00c. Prices include import duty.

Mercury: Open market, spot, New York, $205-$206 per 76-lb flask.

Beryllium Copper: 3.75-4.25% Be, $1.50 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2 del.; special or patented shapes $2.1x.

Cobalt: 97.99%, $2 lb per lb for 500 lb (kegs); $2.42 per lb for 100 lb (cases); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 89.2c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $175-$185 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective July 1, 1952)

Sheet: Copper 43.52; yellow brass 40.17; commercial bronze, 95% 45.15, 90% 44.38; red brass, 85% 43.10, 80% 42.34; best quality 41.35; nickel silver, 18% 55.08; phosphor-bronze grade A, 5% 64.71.

Rod: Copper, hot-rolled 41.37, cold-drawn 42.62; yellow brass free cutting 33.85; commercial bronze 95% 44.84, 90% 44.07, red brass 85% 42.79, 80% 42.05.

Seamless Tubing: Copper 45.56; yellow brass 44.18; commercial bronze 90% 42.44; red brass, 85% 46.01.

Wire: Yellow brass 40.46; commercial bronze 95% 45.44, 90% 44.67, red brass, 85% 44.39, 80% 42.65; best quality brass, 41.64.

(Base prices effective July 1, 1952)

Copper Wire: Bare, soft, f.o.b. eastern mill, 10,000 lb lots 32.25c, 30,000 lb lots, 32.02 l.c.l. 33.42. Weatherproof, 100,000 lb, 33.60, 30,000 lb 33.85c l.c.l. 34.35. Magnet wire del. 15,000 lb or more 38.25, l.c.l. 39.50.

ALUMINUM

(30,000 lb base, freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Jan. 22, 1953.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In.	Inc	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle Base
0.249-0.136	12-48		32.5		
0.135-0.096	12-48		33.4		
0.095-0.077	12-48		34.1	31.8	36.3
0.076-0.061	12-48		34.7	32.0	36.5
0.060-0.048	12-48		35.0	32.2	36.8
0.047-0.035	12-48		35.5	32.6	37.1
0.034-0.030	12-48		35.9	33.0	37.8
0.029-0.024	12-48		36.5	33.3	38.3
0.023-0.017	12-36		37.1	34.0	39.0
0.016-0.017	12-36		37.9	34.6	39.9
0.016-0.015	12-36		38.8	35.4	41.1
0.014	12-24		39.8	36.4	42.4
0.013-0.012	12-24		40.9	37.1	43.4
0.011	12-24		41.9	38.3	45.0
0.010-0.006	12-24		43.1	39.4	46.6
0.005-0.003	12-24		44.3	40.7	48.5
0.004-0.0075	12-24		45.8	41.9	50.3
0.007	12-18		47.3	43.4	52.6
0.006	12-18		48.9	44.8	57.6

* Lengths 72 to 180 inches. † Maximum diameter 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	Round 17S-T4	Hexagonal 17S-T4
0.125	56.8	...
0.126-0.218	48.0	...
0.219-0.375	45.2	...
0.376	43.7	52.4
0.406	43.7	...
0.438	43.7	52.4
0.469	43.7	...
0.500	43.7	52.4
0.531	43.7	...
0.563	43.7	49.2
0.594	43.7	...
0.625	43.7	49.2
0.688	43.7	49.2
0.750-1.000	42.6	46.4
1.063	42.6	44.8
1.125-1.500	41.0	44.8
1.563	40.5	...
1.625	39.8	43.2
1.688-2.000	39.8	...

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 110 sq ft or more $19.00 per cwt; add 50c cwt 100 sq ft to 110 sq ft. Pipe: Full coils $19.00 per cwt. Traps and bends: List prices plus 45%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12 in., 20.75-21.75c; over 12 in., 20.75-21.75c.

"A" NICKEL

(Base prices f.o.b. mill, effective Dec. 15, 1952) Sheets, cold rolled, 79.50c. Strip, cold rolled, 75.50c. Rods and shapes, 73.50c. Plates, 77.50c. Seamless tubes, 108.50c.

MONEL

(Base prices f.o.b. mill, effective Dec. 15, 1952) Sheets, cold rolled, 63.00c. Strip, cold rolled, 60.00c. Rods and shapes, 61.00c. Plates, 62.00c. Seamless tubes, 96.00c. Shot and blocks, 54.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb 10,000 lb and over, f.o.b. mill) Sheets, $15; sheeted mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

DAILY PRICE RECORD

1953	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Feb. 3-5	24.50	13.30	11.50	121.50	20.50	34.50	60.00	89.25
Feb. 2	24.50	13.30	12.00	121.50	20.50	34.50	60.00	89.25
Jan. 27-31	24.50	13.80	12.00	121.50	20.50	34.50	60.00	87.25
Jan. 22-26	24.50	13.80	12.50	121.50	20.50	34.50	60.00	89.25
Jan. 16-21	24.50	13.80	12.50	121.50	20.00	34.50	60.00	89.25
Jan. 15	24.50	13.80	12.50	121.50	20.00	34.50	60.00	84.75
Jan. 14	24.50	13.80	12.50	121.50	20.00	34.50	60.00	84.25
Jan. 13	24.50	13.80	13.00	121.50	20.00	34.50	56.50	83.75
Jan. 12	24.50	13.80	13.00	121.50	20.00	34.50	56.50	83.25
Jan. 7-10	24.50	14.30	13.00	121.50	20.00	34.50	56.50	83.25
Jan. 2-6	24.50	14.50	13.00	121.50	20.00	34.50	56.50	87.25
Jan. 1953 Avg.	24.50	13.828	12.596	121.50	20.173	34.50	58.654	84.442
Feb. 1952 Avg.	24.50	18.80	10.50	121.50	19.00	50.00	56.50	88.00
Feb. 1948 Avg.	21.50	14.825	12.00	94.00	15.00	33.00	33.75	74.625

NOTE: Copper: Electrolytic del. Conn. Valley. Lead, common grade, del. St. Louis; Zinc, prime western E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9% base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled 42.18c; oval 41.68c.

Nickel Anodes: Rolled oval, carbonized, carloads, 74.50c; 10,000 to 30,000 lb 75.50c; 3000 to 10,000 lb 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c; f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 300 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 300 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 86.7c; 100 or 350 lb drums only, 100 to 600 lb 71.66c; 700 to 1900 lb, 63c; 2000 to 9000 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl $1.25; 100 lb kegs $1.26, f.o.b. Carteret, N. J., freight allowed on 100 lb or more.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point effective June 26, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	18.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	19.75
Phos. Bronze, 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 10,000 lb f.o.b. point of shipment)

Group I: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material.

Group II: No. 1 soft red brass solids 18.50; No. 1 composition borings 19.25 per lb of Cu content plus 61 cents per lb of tin content; mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zinc bronze solids and borings 16.25.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment less than 4000 lb)

Segregated plant scrap: 2s solids, copper free 16.50; high grade borings and turnings, 5.50; No. 12 piston borings and turnings, 7.50; Mixed plant scrap: Copper-free solids, 10.00; dual type, 9.00; Obsolete scrap: Pure old cable, 16.00; sheet and sheet utensils, 7.25; cut castings and forgings, 7.75; clean pistons, free of struts, 7.75; pistons with struts, 5.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Lead: Heavy, 10.25-10.75; battery plates 5.25-5.50; linotype and stereotype 12.00-12.50; electrotype 10.25-10.50; mixed babbitt 13.75-14.00.

Zinc: Old zinc, 5.00; new die cast scrap, 5.00; old die cast scrap, 4.00.

Plates . . .

Plate Prices, Page 141

Philadelphia—District plate mills are turning away far more commercial work for second quarter than they can schedule. Some haven't opened books for the entire period but could readily fill up if they so desired. Strength is reflected in the fact high premium mills are still quoting at unchanged levels and continue active.

Pittsburgh—Steel plate business is currently strong but there is no longer the hue and cry from customers for deliveries, especially for light gage plates. Strong third quarter is anticipated for heavy plates.

Boston—Plate fabricators able to use strip mill universal plates, 36-inches and under in lighter gages, are getting ample tonnage, but wider and heavier sheared stock is parcelled out sparingly with substantial volume taking high priority ratings. June schedules will be quickly filled once producers open books for that period.

New York—Little let-up is noted in plate demand. Fabricators are unable to obtain as much tonnage as they would like and in most instances operations are limited.

Sheets, Strip . . .

Sheet and Strip Prices, Page 141 & 142

Cleveland—Indications are carryover tonnage from first to second quarter will be so substantial producers will be hard pressed right into the third quarter to meet consumer requirements. Except for a few specialties, all of the light flat-rolled products continue under pressure. Recent easing in galvanized sheets is believed largely seasonal and expectations are that with spring a strong pickup in requirements for the coated sheets will develop. Electrical sheets are moving more actively than some time back reflecting largely the noticeable betterment in the home appliance industry.

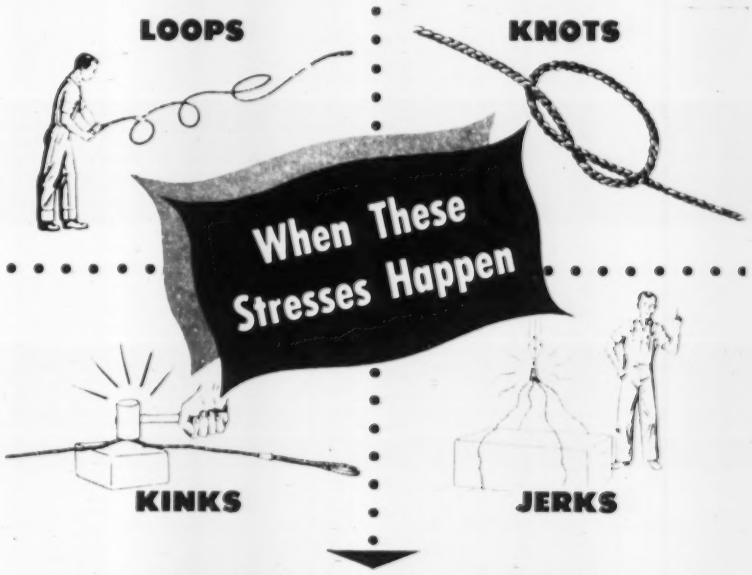
Boston—Demand for flat-rolled steel is heaviest in cold-finished sheets. Second quarter schedules on that product are more extended. Tightest in hot-rolled are heavier gages for household tanks. For the most part, second quarter space in straight chromium grades of stainless is filled, both sheets and strip.

New York—Demand for hot and cold-rolled sheets appears to be expanding. Automotive requirements are heavy and there is an active inquiry for most lines of household appliances.

Philadelphia—No balance between supply and demand in hot and cold-rolled sheets, enameling stock and silicon sheets is expected in first half. Balance may come in galvanized sheets. Since the first of the year there has been some easing in supply, especially in the lighter gages, 26 and 28, for instance, but seasonal influences may alter this trend within the next few weeks.

Pittsburgh—Demand is slightly stronger for hot and co'd-rolled sheets, long ternes and electrical grades. Galvanized sheets, on the other hand, are beginning to back up on the mills.

Detroit—Supply of cold-rolled sheets appears to be causing more alarm among consumers than here-



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more, but no one reports any further extension in delivery dates.

Chicago Sheet demand exceeds output so far, some users are attempting to help themselves by agreeing to take commercial grade instead of hot-topped material. This applies to both hot and cold-rolled. Such substitution can't be made in all cases, but there are numerous borderline cases where it can. The switching is considerable.

St. Louis Cold-rolled sheets are in heavy demand. Deliveries are four months behind, despite the fact three months were kept unsold in the last two quarters in an effort to get current. Equipment trouble interfered.

Birmingham Pressure is being applied for all available cold-rolled sheet tonnage.

Los Angeles Japanese flat rolled steel of good quality is available intermittently in large quantities at domestic warehouse prices or less. Promised delivery is 60 days.

Conversion Steel . . .

Chicago Although some users of conversion steel, such as household appliances, have lost interest in further acquisitions, automobile builders have not. The latter are pressing for additional second quarter sheet tonnage. Inland Steel Co., the leading mill here participating in such operations, is accepting no further business. Its capacity for processing ingots, slabs and hot-rolled bands is fully committed through June.

Steel Bars . . .

Bar Prices, Page 141

Boston Gradual improvement in smaller sizes of carbon bars is enabling more users to improve their inventory position. In heavier sizes consumers are pressing for tonnage with June mill schedules practically filled. For smaller sizes notably in cold-finished, there are openings in May. Contributing strongly to alloy bar demand is small arms production.

New York Pressure for hot carbon bars continues strong and for practically all sizes, especially the larger from 2½ inches and up, which fall in the shell making range. Producers say second quarter demands will be heavier than they can supply.

Philadelphia Small sizes of cold-drawn bars are in easier supply than other carbon bar specifications. This does not mean commercial consumers can get early delivery promises from cold-drawers as a rule, but they can upon occasion, and they should have no difficulty at all in picking up sizes under 1-inch from warehouses.

Pittsburgh Small flood of inquiries from the Middle West is reaching Pittsburgh for small diameter bars. Atomic energy project in Portsmouth, O., is credited with this regional demand.

Cleveland While the smaller sizes are in steadily improved supply, consumers do not anticipate much change soon in tight supply conditions with respect to the larger bar sizes. Military and high-rated defense requirements continue to get shipping preference, and barring a sharp cutback in the defense program, which doesn't seem likely, there is little chance for much improvement in supply for the regular commercial trade.

Detroit Except for small sizes, bars are in hand-to-mouth supply. Consumers are in an uncomfortable position but no cases are reported where the shortage of steel has actually forced a curtailment in manufacturing.

Chicago Recent strike at Inland Steel Co. was costly to civilian bar users. Bar rolling schedules were hit hardest. In some sizes the company has notified customers that delivery dates must be moved back a month.

Rails, Cars . . .

Track Material Prices, Page 145

New York Domestic freight car orders in January involved 5536 units, bringing the backlog as of Feb. 1 up to 77,411, according to a joint statement by the American Railway Car Institute and the Association of American Railroads. Deliveries amounted to 7981 cars against 7845 in the preceding month. This was the highest total since March, 1952.

Chicago Leads Capacity Gain

New York Steel capacity increase last year from the standpoint of actual tonnage was greatest in the Chicago district, according to the American Iron & Steel Institute. The largest percentage increase, however, was scored in the Cleveland-Detroit district.

The Chicago district increase was about 2,702,000 tons, up 12.1 per cent Jan. 1, 1952. Area capacity now is rated at 24,960,600 tons, second largest of the six major producing districts.

The Cleveland-Detroit district scored a 14.5 per cent increase with capacity now 12,002,900 tons annually. Southern district capacity is now 6,036,160, tons, up 14.1 per cent from the start of 1952.

In the Eastern district steel capacity now stands at 23,863,810 tons, increase of 2,153,940 or 9.9 per cent during 1952. In the Western district the capacity is 7,063,000 tons, rise of 571,000 tons or 8.8 per cent.

The leading steel producing district, Pittsburgh-Youngstown, achieved an increase of 1,270,240 tons last year. The district capacity is rated at 43,621,000 tons.

During the last 13 years the largest percentage rise in steel capacity has been in the West, at 223 per cent. This is followed by a gain of 92.7 per cent in the South.

Meanwhile, an increase of about 9,163,000 tons in steel capacity of the Pittsburgh-Youngstown district is the largest gain in tonnage for any district during the 13-year interval. It is followed by a 7,704,000 ton rise in Eastern district; 7,177,000 ton rise in the Chicago area; 4,877,000 tons in the Western district; 4,103,000 tons in the Cleveland-Detroit area and 2,905,000 tons in the South.

The largest tonnage increase in blast furnace capacity last year took place in the Eastern district. The gain was over 2.3 million tons, or

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16.7 per cent. This district also made the greatest tonnage increase from the start of 1940 to the beginning of 1953—5,370,000 tons. The greatest percentage increase in the 13 years was 337.7 per cent in the West.

Wire . . .

Wire Prices, Page 143

Boston—Openings for May and June schedules exist for numerous wire mill products. Second quarter schedules vary, depending on demand and the type of finished wire produced. Heading wire requirements are substantial for automobile assembly, but needs for screw manufacturers are off in some lines. Upholstery spring wire volume is active and there are only limited openings on low carbon manufacturers wire before mid-May.

Structural Shapes . . .

Structural Shape Prices, Page 141

Boston—Fabricating shops are pinched for wanted fill-in sizes, although in some cases over-all inventory of plain material is substantial. Some shops are buying foreign steel at prices slightly below domestic delivered prices, Boston.

Philadelphia—Structural shops inventories are increasing, but leave much to be desired in point of balance. Fabricators see little likelihood of a return to a normal stock position for the next few months. Currently, most shops are eating into backlogs. Public financed work still dominates demand.

Pig Iron . . .

Pig Iron Prices, Page 140

Philadelphia—Although basic pig iron continues in tight supply, foundry iron supply is adequate with operations at most gray iron foundries still lagging.

Colorado Fuel & Iron Corp. has appealed to the Interstate Commerce Commission for a $19 rate on pig iron from its Minnequa, Colo., plant to its mill at Claymont, Del. The present combination rate on iron between these two points is $31.48. If the proposed rate of $19 is established, the carriers, according to the appeal, can expect a movement of 5000 to 10,000 gross tons per month, depending upon operations at the Claymont plant.

Attention was directed in the appeal to recent establishment from Rock Island, Wash., to Claymont of a rate on pig iron of $26.91 per gross ton, minimum weight per car of 45 gross tons. For an approximate distance of 2843 miles this rate produces earnings of 43 cents per car mile. The suggested rate of $19 from Minnequa for a distance of 1808 miles at a minimum rate of 50 gross tons will produce revenue of 53 cents per car mile, it is pointed out. Colorado Fuel & Iron claims test cars shipped from Minnequa to Claymont have averaged 57.7 gross tons per car, well over the proposed 50 gross ton minimum weight proposed for this plant-to-plant movement.

Boston—At the current melt level most foundries are in good shape with respect to pig iron supply. Some are patching slight gaps in their in-

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ventories, but pressure for tonnage is light.

New York Pig iron consumption in this district shows little variation, with supply ample.

Buffalo Reported easing in heavy industry is not reflected in the merchant pig iron market. Improvement in buying by smaller melters is especially encouraging.

Pittsburgh Continuing slow foundry activity is reflected in the slack market for merchant pig iron.

Cleveland With supplies adequate for all current needs, pressure for merchant pig iron is noticeably easier as compared with this season a year ago. The furnaces are disposing of all their tonnage, but the foundries are disposed to order only against needs in sight. Recent lifting of the inventory limit to 60 days from 30 days has not resulted in any particular pickup in consumer ordering. Despite the improved supply situation no yard piling of iron is reported by furnaces.

St. Louis Pig iron market is unsettled over the prospect of early price decontrol. Profit margins are considered unsatisfactory.

Birmingham—Pressure for pig iron deliveries remains below peak. Merchant iron sellers are taking care of the overall demand with a little leeway here and there. Woodward Iron Co., whose No. 1 furnace at Woodward was down since Jan. 10 for relining, returned the stack to the active list Feb. 8.

Los Angeles Large quantities of pig iron are quoted at $50 per gross ton delivered, about $10 less than posted, and are unsettling the market for cast scrap.

Iron Ore . . .

Iron Ore Prices, Page 147

Cleveland With ice conditions on the Great Lakes less severe than usual for this time of the year, lake shippers are expecting one of the earliest openings of navigation on record. Word from the head of the lakes is that there is little ice in Lake Superior with only drift ice reported in Whitefish Bay and shallow ice in the St. Mary's river, entrance and exit to the Soo Locks. Meanwhile, stocks of iron ore at lower lake docks and furnaces are reported adequate to support capacity blast furnace operations into May.

Tubular Goods . . .

Tubular Goods Prices, Page 145

Cleveland Pipe jobbers are taking all the buttweld and seamless tonnage they can obtain from the mills. Supplies of buttweld are somewhat freer but seamless continues very tight. Overall supply prospects in the tubular goods are for continued strong demand right through the remainder of the year.

Reflecting further decline in the price of zinc producers of galvanized pipe last week increased their discounts to the basis of 11.50 cents per pound zinc.

Boston More buttweld tonnage is available as distributors curtail allotments. Some direct shipment tonnage is being passed up. Buttweld pipe prices are softening at the distributor level, jobbers frequently offering tonnage 10 per cent off list.

Pittsburgh Additional tonnage of small-diameter pipe is being made available to the trade by the A. M. Byers Co., shipments in sizes 2-inches to 10-inches in diameter, being made by this producer within the 15 day lead time on rated orders.

Scrap . . .

Scrap Prices, Page 148

Philadelphia Once price controls are lifted, it appears likely there will be a firming up on the better grades of open-hearth steel scrap with an easing in secondary grades. Some leaders believe there will be a return to the differential system which ruled before present schedules were set up. Currently, there is no differential between No. 1 heavy melting and No. 2 heavy melting or No. 2 bundles. While, with the lifting of controls there may be no higher prices for No. 1, a differential of at least $1 under No. 1 may develop on the latter two grades. European sellers of steel scrap are feeling out the market in this country with a view to developing some business. Cast grades continue easy with No. 1 cupola cast now quotable at $41 to $45 delivered.

Boston Steel scrap consumers can buy ample tonnage at ceiling prices, but some are holding down purchases to bare inventory level.

New York Scrap brokers' prices are unchanged with tonnage moving steadily, but reflecting little consumer pressure.

Buffalo No outstanding changes are expected in the scrap market if government controls are lifted. Only minor price adjustments on the upside are looked for in quality steel grades.

Pittsburgh Until the mills' inventory position deteriorates, activity in the scrap market is expected to be slow. Electric furnace and better grades of open-hearth scrap are the most liquid items.

Washington Stocks of purchased scrap held by consumers at the end of November, latest month for which data are available, totaled 4,987,392 gross tons, according to the Bureau of Mines. This was a slight decrease for the second consecutive month but the total was 2,159,266 gross tons greater than on June 1, 1952.

Chicago Should scrap prices be decontrolled soon, little change would likely occur in cast scrap prices, already depressed. In steel scrap there could be a few advances. Better grades of heavy melting steel now involve springboards of about $2.50 per ton, and this might be reflected in a corresponding boost.

St. Louis Premium scrap grades continue in good demand but there is a marked fall-off in secondary items. Brokers attribute this to near-term price uncertainty. Mills, however, are taking all the melting steel they can get for 30-day shipment.

Birmingham—Some pickup in the movement of heavy melting steel to

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points in the east is reported. Cast grades continue slow.

Los Angeles—The scrap market is in the doldrums. Prices of steelmaking grades have declined $2 and some mills are out of the market altogether. The cast market is weaker. Offerings of foundry material are being made at $5 less than ceiling without acceptance.

San Francisco—The present level of scrap prices is regarded as somewhat shaky. The market is described as "full" and there is some indication steel mills are cutting down on purchases.

Seattle—Foundries report normal seasonal activity. All materials are in good supply. Cast iron scrap supply exceeds current demand, going prices ranging from $35 to $40. One broker reports sales of cast iron at $42.50. Bundles are slightly firmer, being quoted above $29. The Navy is offering another lot of 1000 tons of heavy melting.

Warehouse . . .

Warehouse Prices, Page 147

Chicago—Statements that warehouse inventories are back to 60 per cent of normal compared with 30 per cent at end of the steel strike are true, but they are grossly misleading to consumers. Tonnage-wise, over-all stocks have improved to this degree. But product-wise it just isn't so.

Boston—Lack of balance in stocks hampers warehouse business but more steel is coming in from the mills. Galvanized sheets, small sizes of carbon bars, nails, cold-rolled strip and narrow plates are in improved supply. But heavy plates, large size bars, structurals and cold-rolled sheets are in insufficient tonnage to meet demand.

Philadelphia—Warehouse inventories are up compared with a few weeks ago, but there is still a definite lack of balance in such items as plates, shapes, hot-rolled bars, and hot and cold-rolled sheets.

Pittsburgh—Some warehouse customers claim they don't have much work ahead, and are easing up on their demands. Generally, warehouses are enjoying good business, but a slowing up is expected.

Cleveland—Some warehouses are not getting in hot and cold-rolled sheet tonnage in the volume they had anticipated. As a result, supply conditions in the light, flat-rolled items at the warehouse level continue stringent. Large bars also continue scarce and the same is true of heavy plates. Smaller sizes of bars are noticeably improved.

Canada . . .

Toronto, Ont.—Canadian production of iron and steel in 1952 set new records, and with new units already operating and more coming into production over the next couple months further gains in output are indicated for 1953.

Production of steel ingots and castings last year was 3,721,692 net tons comparing with 3,567,361 in 1951 and 3,384,131 in 1950. December output of 319,684 net tons compared with 308,626 in November, and with 296,545 in December, 1951.

Pig iron production in 1952 rose to

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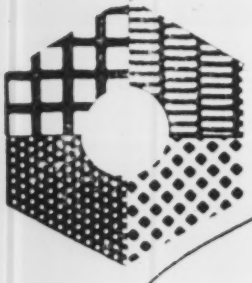

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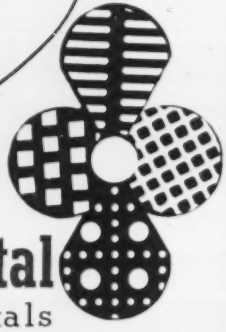

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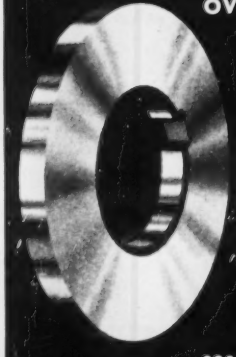

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2,682,065 tons from 2,552,696 in 1951 and 2,309,732 in 1950. Output included 2,064,357 tons of basic, 220,561 tons of foundry and 397,147 tons of malleable iron.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2520 tons, state bridge, Ontario county, New York, through Johnson, Drake & Piper, general contractors, to Ernst Iron Works Inc., Buffalo.

1165 tons, hospital, Franklin D. Roosevelt Drive at 76th St., New York, through Vermilya Brown, general contractor, to Harris Structural Steel Co., that city.

1200 tons, bridge, Washington state, Cowlitz river, reported awarded Poole, McGonigle & Dick, Portland, general contract to Peter Kiewit & Sons, Longview, Wash.

925 tons, warehouse, Maguire Air Field, Fort Dix, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

900 tons, Consolidated high school, Parkland School District Authority, Seigersville, Pa., to Bethlehem Contracting Co., Bethlehem, Pa.

850 tons, 15-story office building, 720 Fifth Ave. Realty Corp., 5th Ave. at 56th St., New York, to Bethlehem Steel Co., Bethlehem, Pa.

800 tons, plant building, Container Division, International Paper Co., Los Angeles, to Consolidated Western Steel Corp., that city.

450 tons, Dupont research laboratory, Kinston, N. C., to Bethlehem Fabricators, Bethlehem, Pa.

442 tons, state bridge, Erie county, New York, through Johnson, Drake & Piper, general contractor, to Ernst Iron Works Inc., Buffalo.

420 tons, state bridge work, Bronx, New York city, through Delma Engineering Corp., general contractor, to American Bridge Division, U. S. Steel Corp., Pittsburgh.

425 tons, state bridge work, Newark, through Ell-Dorco Contracting Co., general contractor, to Bethlehem Steel Co., Bethlehem, Pa.

280 tons, exchange division, New Jersey Bell Telephone Co., Morristown, N. J., to the Hudson Structural Iron Works, Jersey City, N. J.

135 tons, junior high school No. 216, Queens, New York, to Simon Holland & Son Inc., Brooklyn.

STRUCTURAL STEEL PENDING

7500 tons, steel H-piles, Hoboken, N. J., piers; bids Feb. 16, Port of New York Authority, New York.

1400 tons, The Dalles Columbia river power house; bids Apr. 1 to U. S. Engineer, Portland, Oreg.

825 tons, state highway bridges, Amesbury-Salisbury, Mass.; A. V. Tauras Co. Inc., Somerville, Mass., low.

425 tons, manufacturing plant, New Haven, Conn., Westcott & Naples Co., New Haven, general contractor.

185 tons, state highway and bridges, Bridgewater and Raynham, Mass., J. F. Fitzgerald Construction Co., Boston, low $946,235.

REINFORCING BARS . . .

REINFORCING BARS PLACED

6400 tons, Columbia Point, housing project, Boston, to Bethlehem Steel Co., Bethlehem, Pa.; John Bowen Construction Co., Boston, general contractor.

500 tons, traffic-maintenance building, route 9, Wellesley, Mass., to United States Steel Supply Div., U. S. Steel Corp., Cambridge; Canter Construction Co., Brookline, Mass., general contractor.

360 tons, Washington state Cowlitz river bridge, to Northwest Steel Rolling Mills Inc., Seattle; Peter Kiewit & Sons, Longview, Wash., general contractors.

210 tons, housing project, New Bedford, Mass., to Joseph T. Ryerson & Son Inc., Cambridge; Platt Construction Co., Boston, general contractor; Hub Steel & Iron Works, Boston, structural steel.

REINFORCING BARS PENDING

30,000 tons, substructure, The Dalles power house, Columbia river; bids Apr. 1 to U. S. Engineer, Portland, Oreg.

200 tons, four reinforced concrete bridges, Bourne-Sandwich-Barnstable, Mass., Campanella & Cardi Construction Co., Hingham; R. I., general contractor.

110 tons, Washington state highway project, Grays Harbor and Clark counties; bids to Olympia, Feb. 24.

120 tons, Garden State Parkway, contract No. 19, section 7, Monmouth county, N.J.; bids Mar. 2; also 62,000 square feet steel sheet piling; also bids will be opened Feb. 26 on 21,000 square feet of steel sheet piling for contract 18, Section 7 of the parkway.

PLATES . . .

PLATES PLACED

10,000 tons, 12 tanks, Reserve Terminal Corp., Perth Amboy, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

3,000 tons, municipal water main, Queens, New York city, through Oakhill Contracting Co., Inc., general contractor, to Alco Div., American Locomotive Co., Schenectady, N. Y.

1300 tons, two oil tanks, Delaware River Terminal Co., Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa.

550 tons, storage tanks, New Haven terminal, New Haven, Conn., to the Bethlehem Steel Co., Bethlehem, Pa.

400 tons, oil storage tank, Philadelphia Gas Works Division, United Gas Improvement Corp., Philadelphia, to Chicago Bridge & Iron Co., Chicago.

165 tons, 1,500,000 gallon standpipe, New York Water Service Corp., Rochester, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

PLATES PENDING

750 tons, 226 tanks, 500-barrel capacity each; bids Feb. 17, Bureau of Yards & Docks, Port Hueneme, Calif.

600 tons, The Dalles powerhouse, Columbia river, bids to U. S. Engineer, Portland, Apr. 1.

125 tons, 440 tanks, 24-barrel capacity each, bolted; bids Feb. 23, Bureau of Yards & Docks, supply officer, Port Hueneme, Calif.

100 tons, 150,000-gallon elevated water tank, Palm Beach International Airport, Florida; Whitmire Tank Co., Jacksonville, low $61,495.

PIPE . . .

CAST IRON PIPE PLACED

240 tons, various sizes, to Pacific States Cast Iron Pipe Co., Portland, Oreg., by Vancouver, Wash.

CAST IRON PIPE PENDING

300 tons, The Dalles powerhouse project, Columbia river; bids to U. S. Engineer, Portland, Oreg., Apr. 1.

150 tons, 10 and 6-inch, District No. 20, Seattle, contractor's job, bids in.

STEEL PIPE PENDING

300 tons, various sizes, The Dalles dam project, Columbia river, bids to U. S. Engineer, Portland, Oreg., Apr. 1.

RAILS, CARS . . .

LOCOMOTIVES PENDING

Marietta Transportation Corps depot, Marietta, Pa., six 50-ton diesel electric; bids Feb. 16; also six 65-ton diesel electric; bids Feb. 18.

New York Central, diesel locomotive units for 1954 delivery at a cost of about $20 million; inquiry out shortly.

RAILROAD CARS PLACED

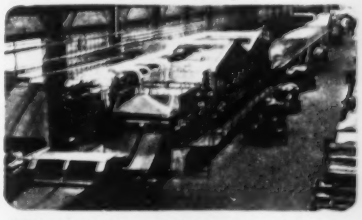
L. & N. railroad placed 1000 box cars with Bessemer plant of the Pullman Standard Car Mfg. Co., Birmingham, Ala.

L. & N. railroad placed 1000 cars, divided between Pressed Steel Car Co., Mt. Vernon, Ill., and Bethlehem Steel Co., Johnstown, Pa.

RAILROAD CARS PENDING

Pacific Fruit Express Co., 200 fifty-foot refrigerator cars, pending.

Savannah & Atlanta, 200 freight cars, directors have authorized purchase.



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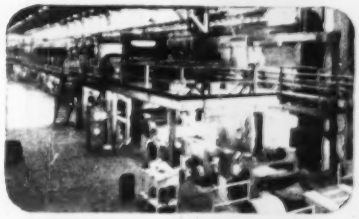

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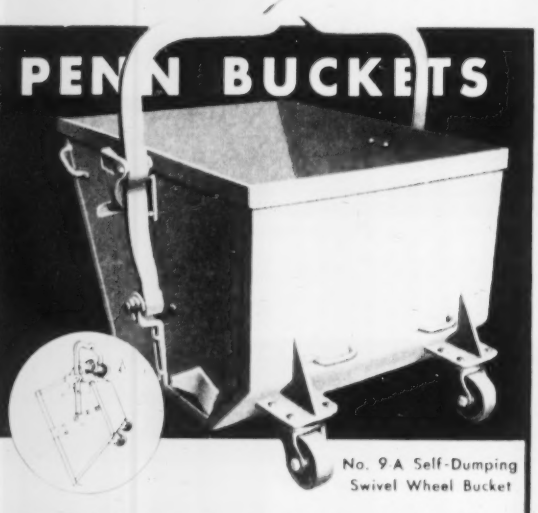

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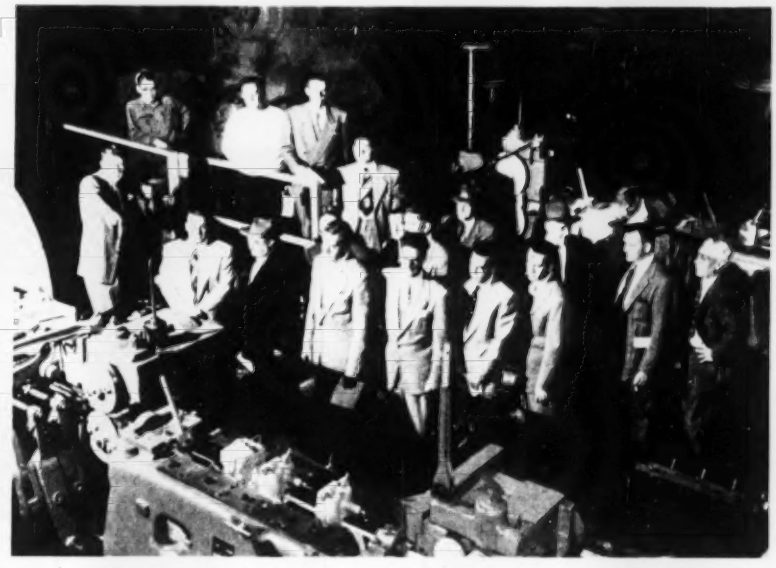

Sales Staff Sees Everything from Nuts to Bolts

In order to obtain a thorough understanding of operational methods and facilities of bolt and nut specialties, salesmen and other personnel of Bethlehem Pacific Coast Steel Corp. take a conducted training tour of the company's three bolt and nut plants in South San Francisco, Los Angeles and Seattle. A portion of the Los Angeles sales staff is shown above inspecting a ¾-inch boltmaker.

Korhumel Opens Branch Warehouse

Korhumel Steel & Aluminum Co., Evanston, Ill., opened a branch warehouse, in Bridgeport, Conn. Paul R. Sonner, vice president, is in charge of the company's eastern operations. Norman I. Ingram, formerly manager of the cold-rolled strip steel department, is office manager of this branch. Bruce Osborne Jr. is manager of the Minneapolis branch sales office, succeeding Edward P. O'Hara who is now assistant to the executive vice president. A branch warehouse will be built soon in Indianapolis.

Air Reduction To Build Plant

Air Reduction Sales Co., New York, will construct a liquid oxygen plant in Riverton, N. J. The plant also will produce nitrogen and argon. Several million dollars will be invested in this plant and its related facilities.

Service Machine Completes Plant

Service Machine Co., Elizabeth, N. J., completed construction of a plant for general tooling and production. The company is engaged in heavy machine manufacture, tool and die making, light assembly and machining. I. George Seget is president.

Ford Opens Truck-Rail Terminal

Ford Motor Co.'s pool truck operations were transferred to its new truck-rail terminal at 3936 Lonyo Rd., Detroit.

Kellogg Expands on West Coast

M. W. Kellogg Co., New York, subsidiary of Pullman Inc., established warehousing facilities for plastic molding powders at Vernon, Calif.

Tool Steel Seller Opens Office

A. Milne & Co., New York, tool steel distributor, established a sales office at 833 E. Kilborn St., Milwaukee, under the management of George H. Joch.

Factory for Chrome Furniture

Certified Chrome Furniture Co., Los Angeles, will build a $1,750,000 factory near Los Angeles International Airport to consolidate production of chrome furniture.

Foxboro Opens Branch Office

Foxboro Co., Foxboro, Mass., manufacturer of industrial instruments for measurement and control, opened

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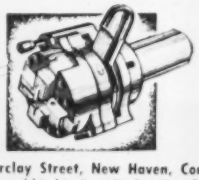

famous for accuracy and straightness of threads, low chaser costs, less downtime, more pieces per day.

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a branch office at 2267 S. Pinecrest, Wichita, Kans.

White Opens West Coast Facilities

White Motor Co., Cleveland, opened its West Coast headquarters building at Fifth and Brannan streets, San Francisco.

Rust-Oleum Appoints Distributor

Rust-Oleum Corp., Evanston, Ill., manufacturer of rust preventives, appointed Industrial & Farm Equipment Corp., Chester, Pa., as a distributor.

Chiksan Expands Facilities

Expansion of Chiksan Co.'s plant in Brea, Calif., is under way to increase office area and warehouse and assembly facilities.

Parkview Metal Moves Factory

Parkview Metal Products Inc. moved its offices and factory to 1931 W. Armitage Ave., Chicago 39.

Roofing Plant Attains Peak Output

Cross crimpled aluminum roofing is now in full production at Quaker State Metals Co.'s plant in Mountville, Pa.

Fram Ltd. To Build Filter Plant

A $150,000 plant will be build at Stratford, Ont. by Fram (Canada) Ltd., Canadian subsidiary of Fram Ltd., manufacturer of filters for automotive and engine uses. Construction of the 24,000 sq ft plant is expected to be completed within six months.

GE Leases Syracuse Plant

General Electric Co. leased 18,000 sq ft of floor space in Syracuse, N.Y., for its components department. The new location will house the department's engineering laboratory and also provide space for small pilot lines on which production techniques will be studied for manufacture of components of electronics equipment.

Gisholt Machine Moves Branch

Gisholt Machine Co., Madison, Wis., manufacturer of turret and automatic lathes, balancing machines, superfinishers, turn mills, etc., moved its Chicago sales office to 6920 W. North Ave., that city.

Warwick Co. Moves Offices

Warwick Co., sales representative for H. & H. Tube & Mfg. Co., Detroit, and Sheet Aluminum Corp., Jackson, Mich., moved its offices to 5306 W. Lawrence Ave., Chicago.

Cleco Appoints Distributors

Cleco Division, Reed Roller Bit Co., Houston, appointed as distributors in their respective territories: H. B. Bighouse Co., Newark, N. J.; Nixon Machinery Co., Nashville, Tenn.; Swing Machinery & Equipment Co., San Antonio, Tex.; and San Antonio Machine & Supply Co., Waco, Tex. Cleco manufacturers air tools and accessories.

Boiler Maker Appoints Distributor

Orr & Sembower Inc., Reading, Pa., manufacturer of boilers, appointed Combustion Equipment Co., Chicago, as its distributor in that territory.

M. L. Abrams Moves Office

M. L. Abrams Co. moved to 1841 Prospect Ave., Cleveland. The company offers new, used and remanufactured printing machinery and supplies.

Warner Electric Appoints Agent

Warner Electric Brake & Clutch Co., Beloit, Wis., appointed Charles W. Carter Co., Los Angeles, as West Coast distributor for its Automotive division.

Develop New Moisture Conditioner

Admiral Corp., Chicago, reported development of a "two way" moisture conditioner which increases the humidity content in the home in winter and lowers it in summer.

Completes Abrasive Plant

American Wheelabrator & Equipment Corp., Mishawaka, Ind., completed construction of a plant designed for manufacture of a new blast cleaning abrasive.

Draws Plans for Expansion

Dalmo Victor Co., San Carlos, Calif., an electronics firm, completed construction plans for a plant addition to house a military equipment test laboratory.

Canadian Firm Enters U. S.

General Engineering Co. Ltd., Toronto, Canada, announced the open-

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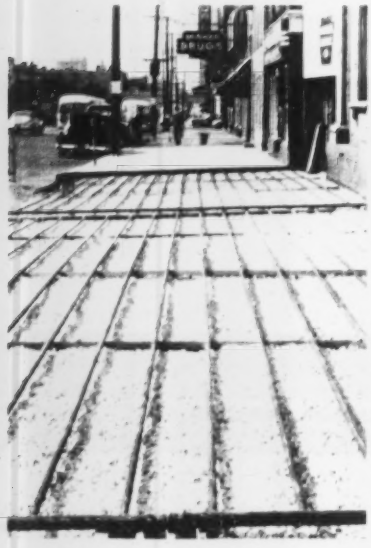

Let It Snow, Let It Snow

To eliminate the "quick freeze" effect of snow storms blowing off Lake Erie, Security Peoples Trust Co., Erie, Pa., had Scobell Co., Erie, design and install a sidewalk heating system. Made of A. M. Byers Co., Pittsburgh, wrought iron pipe, the system will keep 2300 square feet of sidewalk clear of dangerous ice and snow and will eliminate costly snow removal equipment

ing of GECO Inc. with offices in Cleveland.

Miller Dial Finishes Building

Miller Dial & Name Plate Co., El Monte, Calif., maker of metal, plastic and phenolic dials, completed construction of a $300,000 factory-office building.

Magnets for Small Users

Magnets are being stocked in packaged quantities for the small user and are available at new lot prices for the first time, the Carboloy Department of General Electric Co. announces.

Plant for Lathe Chucks

Skinner Chuck Co. completed its plant in New Britain, Conn. It provides facilities for production of lathe chucks and machine vises for machine tools.

Fluor Corp. Gets AEC Contract

The Atomic Energy Commission awarded Fluor Corp. Ltd., Los Angeles, a contract for design and engineering of a $29 million explosive processing and assembly plant near Macomb, Ill.

B&W To Build Plant

Babcock & Wilcox Co., New York, purchased a site near Wilmington, N. C., for a $2 million plant for constructing boilers and related equipment.

Judd Industries Formed

Charles H. Judd formed Judd Industries Inc. to specialize in small, progressive stampings. Offices are located at 3148 W. 32nd St., Cleveland.

Office Space Leased

Calumet & Hecla Inc., metal producer and fabricator, leased quarters for its executive offices at 122 S. Michigan Ave., Chicago.

Apex Forms New Company

Apex Smelting Co. formed National Metallurgical Corp. to construct and operate its pilot plant at Springfield, Oreg., for production of aluminum-silicon metal from clays.

Wins J. E. Johnson Award

Charles M. Squarcy, assistant superintendent of blast furnaces at Inland Steel Co.'s Indiana Harbor, Ind., Works, was named recipient of the J. E. Johnson Jr. award for meritorious service to the iron and steel industry.

Reuland To Build in Michigan

Reuland Electric Co., Alhambra, Calif., manufacturer of electric motors and magnetic brakes, will build a factory on a site between Detroit and Lansing, Mich.

Solar Steel Buys Company

Solar Steel Corp., Cleveland, purchased the business of United Steel Products Inc., Worcester, Mass.

Plant Being Modernized

General Electric Co.'s receiver works in Utica, N. Y., launched a $100,000 modernization program. Some 8000 square feet of floor space will be added.

Plans Building on Long Island

John Hassall Inc., Brooklyn, N. Y., plans to construct a plant at Westbury, Long Island, N. Y.

Gorden Birgbauer Honored

The Cutting Tool Manufacturers Association elected Gordon Birgbauer as president. He is president of the Super Tool Co., Detroit.

Establishes Eastern Office

National Motor Bearing Co. Inc., Redwood City, Calif., established an office in Newark, N. J., as headquarters for a staff of sales and field engineers to serve eastern accounts.

Plant for Carbonic Dispenser

Carbonic Dispenser Inc., producer of metal machines to dispense soft

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150 H.P., B&W #10, Class H-2 Stirling Water Tube Boiler gas and or oil fired, with 42" dia. x 125 ft. x 3 16" shell steel stack, also duplex boiler feed pump 6" x 4" x 6", new 1942.

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STANDARD GAUGE FREIGHT CARS

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Gondolas, Composite, or All Steel 50-Ton and 70-Ton
Hoppers, Twin All-Steel, 50-Ton, Cross Dump
Tank, 3,000 Gallon, High Pressure
Tank, 8,000 Gallon, Coiled and Non-Coiled

Hoppers, All-Steel, 70-ton, Cross Dump

EXTRA LONG FLAT CARS

40 & 50-Ton Capacity, Length 70' and 74'

CABOOSE CARS

Eight Wheel, Cupola Type

STANDARD GAUGE AIR DUMP CARS

Side Dump, 20-Yd., 40-Ton, Lift Door
End Dump, 20-Yd., 50-Ton Drop Door
Side Dump, 30-YD., 50-TON, DROP DOOR

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Experienced in all phases of metal fabrication, such as deep drawing, forming, progressive die work and eyelet production. Midwest location. Many employment benefits. Reply Box 661, STEEL, Penton Bldg., Cleveland 13, Ohio.

METHODS MAN, ENGINEER: Knowledge metal processing industry, five to eight years experience in methods work plus knowledge of cost control, time study, equipment and methods analysis, work simplification techniques, supervisory experience. Head new methods division. Send resume, state salary requirements. Write Box 667, STEEL, Penton Bldg., Cleveland 13, Ohio.

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Must have experience in laying out multiple impression forging dies, and estimating of forgings, five pounds and under. Some die sinking and forge shop experience preferred. Additional opportunities in management available for person with proper qualifications.

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MAINTENANCE SUPERINTENDENT

For ore concentration plant in Colorado. Mechanical Degree preferred but not essential. Job requires ability to organize and supervise maintenance department with the help of three maintenance foremen. Should have 8 to 10 years experience in practical equipment maintenance and supervisory work. Salary open.

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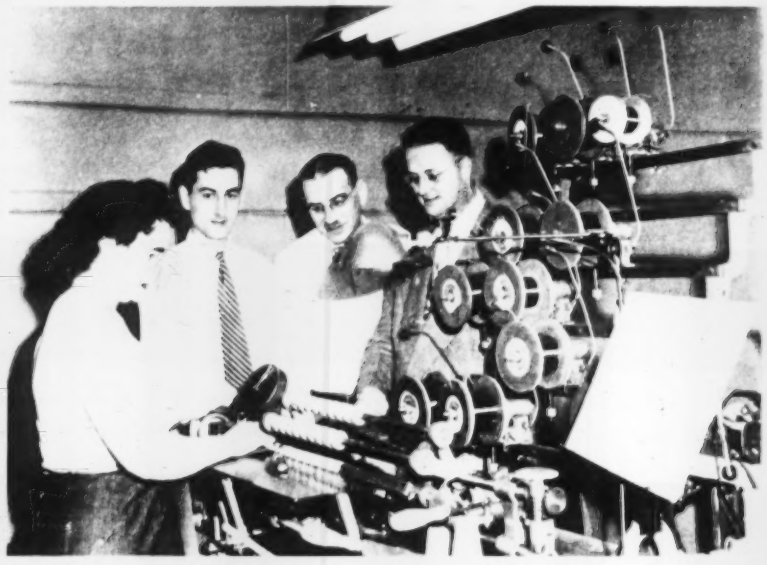

Femco Authorizes New European Agent

Reno-Lepaute of Paris, French manufacturer of precision apparatus, is the new licensed manufacturer and sales agent for Farmers Engineering & Mfg. Co., Irwin, Pa. in Europe and French possessions. Alain Bertrand, second from left, of the French firm, and company officials inspect a Femco manufacturing operation

drinks, is ready to move into a plant and offices near Youngstown.

$5 Million Expansion Planned

American Welding & Mfg. Co., Warren, O., will build a 25,000-square-foot plant addition soon as part of a $5 million expansion program.

Algoma Plans Cold Strip Mill

Algoma Steel Corp. Ltd. plans a cold strip mill costing $3.5 million to be built at Sault Ste. Marie, Ont.

New Post for D. A. Rhoades

D. A. Rhoades, vice president and general manager of Kaiser Aluminum & Chemical Corp., Oakland, Calif., was elected president of the Aluminum Association.

Change in Office Address

Iron Lung Ventilator Co. moved its general offices from 1019 Prospect Ave., Cleveland 3, to 5403 Prospect Ave., that city.

Corporation Has New Name

Balmar Corp., Woodberry, Md., changed its corporate name to Franklin Balmar Corp.

Plant Addition Scheduled

The HLG Electric Ventilating Co., Chicago, will build a 35,000 square-foot addition costing $500,000.

Adamas Names New Representative

Adamas Carbide Corp., Harrison, N. J., manufacturer of tungsten carbide tool tips, dies and wear parts, appointed Tool Specialists of Westbury, Long Island, N. Y., as a district sales representative.

Mount Vernon Leases Plant

Mount Vernon Die Casting Corp. leased the plant formerly occupied by the Petroleum Heat & Power Co., Stamford, Conn.

Open House at A. M. Castle

A. M. Castle & Co., independent steel distributor, held open house to inaugurate its new steel warehouse in Rockford, Ill., Feb. 6.

Detroit Harvester Buys Pioneer

Detroit Harvester Co. purchased the Pioneer Pump & Mfg. Co., Detroit. Detroit Harvester produces automotive parts and equipment, farm mowers and sweepers.

Crown Opens Milwaukee Office

Crown Steel Sales Inc., Chicago, opened an office at 4256 S. Howell Ave., Milwaukee.

To Construct New Warehouse

Edgcomb Steel Co., Philadelphia, purchased a site in York, Pa., for a steel warehouse. Construction will start immediately.

Douglas Aircraft Plans Expansion

Douglas Aircraft Corp., Long Beach Division, Long Beach, Calif., plans to construct $2 million worth of additional factory facilities.

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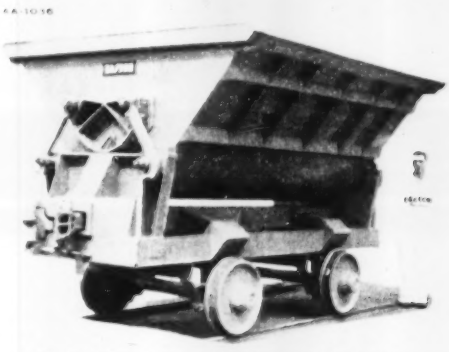
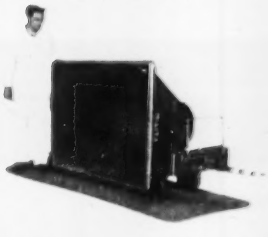


Rocker Dump Cars, gravity dump to either side. Capacities 18 cu. ft. to 8 cu. yds.

Rocker Dump Trailers for all purposes on steel, solid rubber or pneumatic tires.



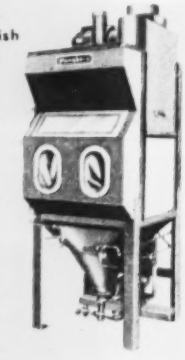
EASTON

ROCKER DUMP Cars and Trailers

EASTON CAR & CONSTRUCTION COMPANY · EASTON, PA. · NEW YORK · PHILADELPHIA · PITTSBURGH

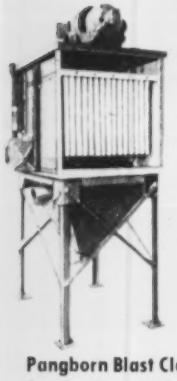
PANGBORN
SPEEDS UP PRODUCTION, LOWERS COST

WITH PRECISION FINISHING . . .



Pangborn Hydro-Finish Cabinet Removes scale and directional grinding lines . . . holds tolerances to .0001" and prepares surfaces for painting or plating. Liquid blast reduces costly hand cleaning and finishing of molds, dies, tools, etc. Models from . . . **$1410** and up.

AND DUST CONTROL



Pangborn Unit Dust Collector Traps dust at the source. Machine wear and tear is minimized, housekeeping and maintenance costs reduced. Solves many grinding and polishing nuisances and allows reclamation of valuable material. Models from . . . **$286** and up.

Pangborn Blast Cleaning Machines for cleaning tanks, bridges, structures quickly and economically. Portable and stationary models, 6 sizes . . . $170 and up. Cabinet for cleaning small metal parts better and faster . . . $319 and up.

Write for details on these machines to: PANGBORN CORPORATION, 1600 Pangborn Blvd., Hagerstown, Md.

Look to Pangborn for the latest developments in Blast Cleaning and Dust Control equipment

Pangborn

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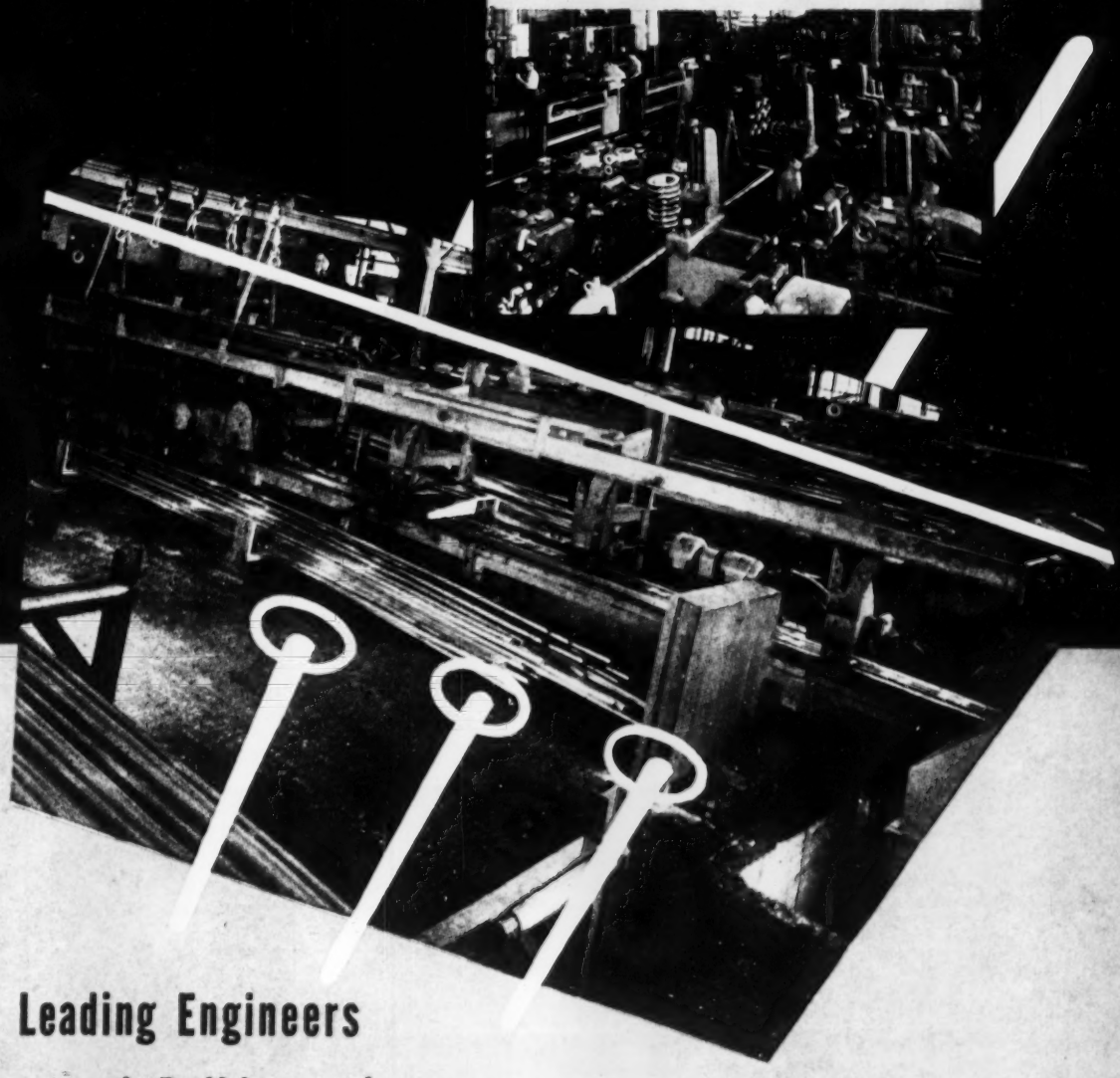
THE AETNA-STANDARD ENGINEERING COMPANY



Leading Engineers and Builders of DRAWBENCHES

ASSOCIATED COMPANIES

Head Wrightson Machine Company, Ltd., Middlesbrough, England Great Britain, Finland, Sweden, Norway, Denmark, Union of South Africa, Northern and Southern Rhodesia.

Aetna-Standard Engineering Company, Ltd., Toronto, Ontario, Canada.

M. Castellvi, Inc., New York, N. Y. Mexico, Central and South America.

Societe de Constructions de Montbard, Paris, France France, Belgium, Holland, Luxemburg, Switzerland.

Demag Aktiengesellschaft, Duisburg, Germany Germany, Austria, Yugoslavia, Greece, Turkey, Egypt.

Compagnia Italiana Forme Acciaio, Milano, Italy Italy.

Aetna-Japan Company, Ltd., Tokyo, Japan Japan.

Hale & Kulligren, Inc., Akron, Ohio Representative for the Rubber Industry.

Designers and Builders to the Ferrous, Non-Ferrous, Leather and Rubber Industries

Aetna-Standard

THE AETNA-STANDARD ENGINEERING COMPANY • PITTSBURGH, PA.

Plants in Warren, Ohio · Ellwood City, Pennsylvania

Rolls tubing to within one-half standard wall tolerances... *with help of TIMKEN® bearings*

HEAVY-WALL tubing can be rolled to within one-half standard tolerances on Assel type tube mills, developed by the Timken Company and built by Aetna-Standard. This type of mill is one of the most accurate rolling mills ever built for mechanical tubing.

One big reason for the mill's extreme accuracy is the Timken® tapered roller bearings on the roll necks of the three rolls.

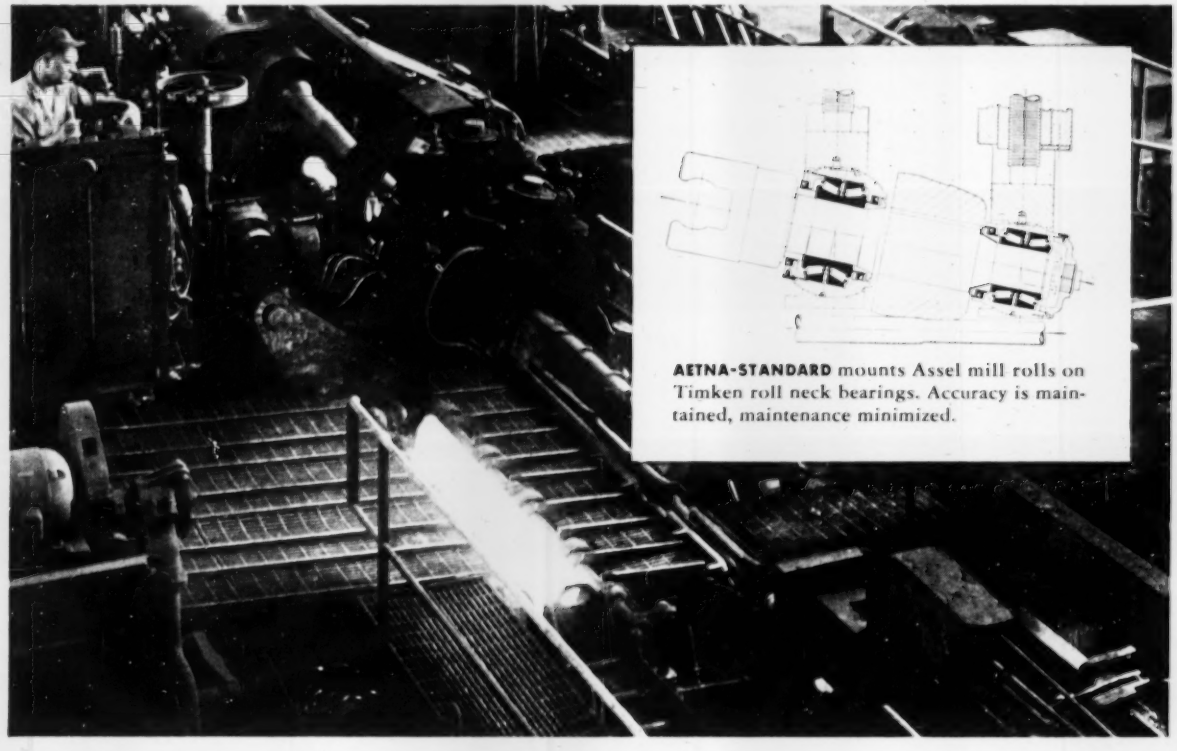
Timken roll neck bearings take radial, thrust and combination loads without special thrust units. Chuck mountings are simpler and more compact. Greater mill rigidity is provided because Timken bearings permit larger diameter roll necks. Load ratings are increased as much as 40%. Roll neck strength is increased 50 to 60%.

Friction within the Timken bearing itself is practically eliminated by true rolling motion and incredibly smooth surface finish. And its lower starting resistance permits mills to accelerate more rapidly.

Timken bearings also eliminate complicated lubrication systems, permit the use of simple and economical grease lubrication. No need for pipes or tubes. Rolls can be changed faster.

To get all these advantages in the mill equipment you buy or build, be sure to specify Timken tapered roller bearings. And look for the trade-mark "Timken" stamped on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN BEARING EQUIPPED — *This symbol on a product means its bearings are the best.*



AETNA-STANDARD mounts Assel mill rolls on Timken roll neck bearings. Accuracy is maintained, maintenance minimized.

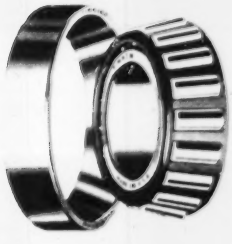
GREATER LOAD AREA

Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

TIMKEN

TAPERED ROLLER BEARINGS



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION